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A REPORT TO THE MINISTER OF HEALTH, PROVINCE OF ONTARIO, ON THE BRANTFORD FLUORIDATION EXPERIMENT*

Prepared upon his request by the Division of Medical Statistics, Ontario Department of Health, August 1955.

INTRODUCTION

The Brantford Fluoridation Experiment was the outcome of a special meeting of the Board of Health of the City of Brantford, convened August the 19th, 1942, to discuss steps which might be taken to improve the condition of the children's teeth in that city. It is unlikely that the Brantford children's teeth were worse than any of those of the children in the rest of the Province but the authorities in that city were conscious of the facts, that nearly every child in the city suffered from tooth decay, and that not a few of the children were so badly affected that they could not masticate their food.

Dr. W. L. Hutton, Director of the Brant County Health Unit, drew the attention of the meeting to the epidemiological studies of American scientists, (McKay, 1925, and Dean, Jay, Arnold, McClure and Elvove, 1939) which had been recently consolidated in a publication of the American Association for the Advancement of Science (Moulton, 1942). These studies had established that the teeth of children of continuous residence in a municipality where the water supply contained a certain amount of fluoride salts were considerably less susceptible to decay.

Chemical analysis of the fluoride content of the Brantford water, which is drawn from the Grand River, was undertaken by the Division of Sanitary Engineering of the Ontario Department of Health, and it was discovered that the water contained only the merest trace of fluorides.

Speculation immediately arose as to whether the mechanical introduction of additional fluorides to a level of 1.2 p.p.m., which in naturally fluoridated regions seemed to give maximum caries reduction without noticeable mottling, would result in a lowering of the susceptibility of the children's teeth in Brantford.

THE SETTING UP OF THE EXPERIMENT

With the approval of the local dental and medical societies, the Boards of Education, the Board of Trade, the Rotary, Kiwanis and other service clubs, the labour unions, and the City Council, the Medical Officer of Health of the City of Brantford, Dr. W. L. Hutton, sought the financial and scientific support of the Ontario Department of Health in an investigation of the influence of fluoridation of the domestic water supply on the dental caries attack rate. This approval was obtained, and in 1944 Dr. A. E. Berry, Director of the Division of Sanitary Engineering, undertook to assist Mr. D. B. Williams, Chemist of the Brantford Water Works, with installation of suitable equipment for the addition of appropriate amounts of sodium fluoride to the water supply.

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*From the June, 1956, Journal of the Canadian Dental Association. Reprinted by the kind permission of the Ontario Department of Health and the Editor of the Journal, Dr. Wesley J. Dunn.

At that time, no specially designed equipment for adding fluorides to a water supply was available and a volumetric dry feeder manufactured to feed Vitamin B for mixing with flour, was adapted for this purpose. A special gravimetric type of feeder is now available and has been used in many of the later installations in other areas.

The annual cost of fluoridation in Brantford using sodium fluoride has been from 13 to 17 cents per capita including the initial cost of the equipment. It has since been demonstrated by an installation in Oshawa, Ontario, that the use of sodium silico-fluoride, a cheaper chemical with a higher percentage of available fluoride, can reduce the per capita cost to around 6 cents per year. With the closing of the ten-year experimental period in Brantford it is planned to change over to the use of sodium silico-fluoride. Although the cost of fluoridation in a community is related to the volume of water used for industrial compared with human consumption (in Brantford with a population of 50,000 people, 1,250,000,000 gallons of water were used in 1955 for all purposes) this "theoretical waste" may be disregarded when the cost per individual is less than 1 cent per month.

Chemical analysis of the fluoride content of the water has been routinely performed using standard methods set down by the Division of Sanitary Engineering of the Ontario Department of Health. A conclusive check is available in terms of the amount of chemical actually added per million gallons of water. Up until February 1949, 23.3 pounds of 95% pure sodium fluoride were added to each million Imperial gallons of water to provide 1 p.p.m. available fluoride ion: after this date the amount was raised to 28 pounds which yields a slightly higher concentration of 1.2 p.p.m.

The cost of the fluoridation which began June 20th, 1945, was initially borne by the Public Utilities Commission of the City of Brantford and amounted to $5,899.00 in the year 1949. In 1949 and yearly until 1955 the Provincial Health Department granted the city $3,000.00 to aid in the cost of this experiment which was designed to benefit all communities in the Province.

Evaluation of the Brantford fluoridation project was made possible by data which have come from two independent sources. The first set of figures have come from the annual examination of all the Brantford school children, by Dr. B. W. Linscott, the school dentist, for each year since 1944 (Hutton, Linscott and Williams 1951, and 1954). The second and complementary set of figures were gathered by Dr. H. K. Brown, Dental Consultant to the Department of National Health and Welfare, which undertook in 1948 to establish experimental controls for the City of Brantford; this was effected through the periodic examination of samples of children in Sarnia where no fluoride is present in the water, in Stratford which has a natural water supply containing 1.2 p.p.m. of fluorides, and as well as Brantford (Brown, 1952, and Brown, Josie, and Stewart, 1953).

FINDINGS

The independent surveys by the Brantford City Health Department, and by the Department of National Health and Welfare are in agreement that there has been a significant reduction in the dental caries attack rate in Brantford

since the introduction of the fluoride in 1945 (Tables I and II). In the same period the dental caries attack rates in the City of Stratford which has natural fluorides in its domestic water supply, and in the City of Sarnia which has essentially no fluorides in its water, have, if anything, slightly increased.

The reduction in dental caries susceptibility has been evident in both the permanent and deciduous dentitions. In terms of the average numbers of decayed, missing or filled teeth per child, this reduction has been in the order of 60 per cent for children of continual residence. For older children or non-continuous residence, that is those migrating into the region in the later years of the experiment, some caries reduction has also been observed.

DISCUSSION

The above findings have been completely corroborated by similar studies conducted concurrently in the United States. From the Kingston-Newburgh study in New York State, which has recently completed its tenth year (Ast, Bushel, Wach and Chase, 1955), it has been reported that for 6 and 7 year old Newburgh children who have consumed fluoridated water all their lives, the average number of decayed, missing and filled permanent teeth was 75 and 68 per cent lower than for comparable Kingston children. At present 1,043 cities in the United States are fluoridating the water supplies for 20,250,000 people, and the practice of water fluoridation has received the approval of almost every official health agency in the United States, Canada and Great Britain.

An investigation into the stage of tooth development during which fluorides must be consumed if the caries resistance is to be achieved was undertaken by the Dental Section of the Division of Medical Statistics in cooperation with the Dental Section of Elgin County Health Unit (Grainger and Coburn 1955). This latter study indicates that a child's tooth receives protection if it has undergone at least the last few months of pre-eruptive development in the mouth when the child is using fluoridated water. Since the development and eruption of the deciduous and permanent teeth is more or less continuous over the first 20 years of life, water fluoridation can be said to be of some benefit to all individuals of these age groups who are consuming fluoridated water.

An excellent study by the United States Public Health Service (Russell and Elvove, 1951) has established that the caries resistance persists at least to the age of 44 years. Since the protection is believed to be due to the chemical bonding of the fluoride with the calcium phosphate of the tooth to produce more resistant enamel, there is little reason to suppose that this protection against caries would be other than lifelong.

The report of the United Kingdom Mission on the subject of fluoridation of domestic water supplies as a means of controlling dental caries (1953), notes that the controlled studies in America were sufficiently encouraging for the United Kingdom Government to send a Mission to study the results. The Mission found that fluoridation was a useful means of reducing the incidence of dental caries in North America and deduced that it would be useful in the United Kingdom. The Mission further noted that no evidence has been forthcoming that the continued consumption of fluorides at a level of about 1 p.p.m. is in any

TABLE I

Mean number of decayed, missing, or filled permanent teeth per child of continual residence in Brantford, Sarnia and Stratford—1944 to 1955 by ages

Survey	City	Age	1944	1945	Fluoridation June 1946 in Brantford	1946	1947	1948	1949	1950	1951	1952	1953	1954	% Reduction Since 1944-5
City Health Department	BRANTFORD	6	0.33	0.47		0.50	0.26	0.25	0.14	0.06	0.11	0.16	0.15	0.14	65
		7	1.87	1.45		1.83	1.00	0.74	0.75	0.51	0.57	0.51	0.48	0.56	51
		8	2.40	2.48		2.76	2.32	1.67	1.37	1.31	1.07	1.18	1.16	1.18	52
		9	3.87	3.17		3.47	2.80	2.70	2.18	1.82	1.79	1.71	1.90	1.68	52
		10	3.71	3.89		4.24	3.73	3.24	3.16	2.62	2.57	2.37	2.06	2.18	43
		11	4.60	4.78		4.92	4.71	4.13	3.74	3.51	3.22	3.03	2.88	2.62	44
		12	6.41	6.19		6.32	5.85	5.59	5.00	4.29	4.31	3.94	3.77	3.66	42
		13	7.61	7.94		7.94	7.02	6.50	6.46	5.57	5.29	5.22	4.89	4.37	44
		14	8.75	8.45		9.47	8.48	6.66	7.00	7.50	6.41	5.74	5.91	5.78	32
															Since 1948
National Health and Welfare		6-8						1.41			0.93		0.63	0.44	69
		9-11						4.07			2.85		2.47	2.27	44
		12-14						7.68			6.10		5.51	4.89	36
	Stratford	6-8						0.41			0.75		----	0.47	—
		9-11						1.13			1.76		----	1.46	—
		12-14						2.55			3.12		----	3.02	—
	Sarnia	6-8						1.60			1.99		2.05	1.69	—
		9-11						4.21			4.48		4.67	4.44	—
		12-14						7.94			8.55		9.54	8.84	—

Note: The independent surveys by the Brantford City Health Department and N. H. & W. are in agreement that there has been a reduction in the number of decayed, missing and filled teeth in Brantford since June 1946 when fluoride was introduced. This reduction for ages where full benefit has been achieved is between 50 and 60%. In the same period the rates in Stratford which has natural water fluoridation and in Sarnia which has no fluoride in the water, have, if anything, slightly increased.

TABLE II

Mean number of decayed, missing or filled deciduous teeth per child of continual residence in Brantford, Sarnia and Stratford from 1944 to 1955 by ages

Survey	Region	Age	1944	1945	Fluoridation June 1946 in Brantford 1946	1947	1948	1949	1950	1951	1952	1953	1954	% Reduction Since 1944
City Health Dept.	BRANTFORD	5	5.82	5.45	4.116	4.11	2.98	3.11	2.61	2.59	2.74	2.31	2.20	61
		6	6.77	6.51	5.73	4.90	4.72	3.57	3.90	3.45	3.16	3.33	2.89	56
		7	6.90	6.66	6.43	6.14	5.16	5.08	4.08	4.39	3.79	3.67	3.50	48
		8	6.31	6.49	6.52	6.40	5.94	5.27	5.29	4.24	4.59	3.79	4.04	37
		9	6.59	5.73	5.66	5.45	5.14	5.10	4.73	4.87	3.86	4.22	3.35	46
		10	3.51	3.97	4.10	3.77	3.61	3.88	3.52	3.17	3.41	2.85	2.89	61
		11	1.74	1.75	2.29	1.96	1.94	1.90	2.18	1.83	1.62	1.90	1.57	10
														Since 1948
National Health and Welfare (missing teeth omitted)		6-8					4.95			3.58		3.22	2.76	44
		9-11					2.37			2.25		1.94	1.93	18
	Stratford	6-8					2.20			2.62		----	2.63	—
		9-11					1.66			1.76		----	1.58	—
	Sarnia	6-8					4.89			4.89		5.17	5.21	—
		9-11					2.50			2.41		2.26	2.11	—

Note: The protection of deciduous teeth by fluoridation is apparent from both sets of data above. These data are somewhat less reliable in ages above 9 years since it is not always possible to distinguish between a tooth missing by extraction and one that is normally shed. While the caries attack rates in Brantford have decreased since the beginning of water fluoridation, the rates for Stratford which has had natural fluoridation for 30 years, and Sarnia which has no fluoride in its water have remained about the same.

way harmful to health and that no risk at present is known to exist. If a risk does exist at all, it is so inconspicuous that it has not been revealed by many years of investigation.

ECONOMIC ASPECTS

The economic soundness of water fluoridation was discussed as below in the report "The Importance of Water Fluoridation to Dental Public Health," as submitted in February 1955.

> "Without water fluoridation the average fourteen year old child in an Ontario community will have experienced about 10 carious surfaces in the deciduous dentition and will have about 13 surfaces of his permanent teeth affected by caries. The cost of restoring these 23 surfaces (if it were possible in the face of the dental manpower shortage) would have been at least $50.00. With water fluoridation this need would be reduced by around two-thirds and the cost presumably to about $20.00. Thus the public expenditure of about $1.40 for water fluoridation, (10 cents per capita for 14 years) eliminates the need for the individual to spend almost twenty times that amount for restorative dentistry. Beyond these considerations is the fact that a perfect tooth is more desirable for many reasons than the most expertly filled tooth."

SAFETY OF FLUORIDATION

The safety of ingesting water fluorides at the recommended dosage has been studied and has been attested to by all of the leading agencies and organizations concerned with the health of the public.

Hagan, Pasternack and Scholz (1954) in analysis of mortality from all causes and from five selected causes—heart disease, cancer, intracranial lesions, arthritis and cirrhosis of the liver—in 64 cities and 16 states, compared the rates of these cities in which water analysis showed fluoride content to be 0.25 p.p.m. or less with those cities with a fluoride content of 0.7 p.p.m. or more. These data showed no statistically significant differences between the age-adjusted mortality rates of fluoride and non-fluoride cities from all causes or from heart disease, cancer, intracranial lesions, arthritis or cirrhosis of the liver.

The Division of Medical Statistics of the Ontario Department of Health has examined the crude and the age-adjusted death rates for cardiovascular, renal diseases, and cancer for the cities of Brantford, Sarnia, Stratford, Hamilton, Toronto, and Sudbury, (Table III). When differences in age distribution of the populations are eliminated, the rates for the two cities having adequate fluoride in the domestic water (Brantford and Stratford) are similar to the rates for the non-fluoride municipalities. Failure to adjust rates for age differences would result in the false conclusion that the death rates were much lower in Sudbury a fact due solely to lower proportion of older persons in the population.

The Commission on Chronic Diseases under the auspices of the United States Public Health Services has recently reported (1954) that "there was no evidence

that the continued consumption of drinking water containing approximately 1 p.p.m. fluoride is in any way harmful to the health of adults or those suffering from chronic illness of any kind." The report concludes "the Commission therefore urges American communities to adopt this public health measure as a positive step in the prevention of the chronic disease, dental caries."

TABLE III

Crude and Standardized Death Rates—Selected Causes
Certain Cities—1950-1953

CITY	Cardiovascular-renal Disease		Cancer	
	Crude	Standardized*	Crude	Standardized*
Brantford	638	558	145	130
Stratford	655	503	172	139
Sarnia	437	541	125	148
Hamilton	502	514	162	162
Toronto	649	546	196	166
Sudbury	256	551	82	143

*Derived by the indirect method using the population at ages for 1951 for each municipality and the mean annual death rates at ages for the Province for 1950-53.

Note No. 1: Due to an apparent discrepancy in the count of deaths for Sarnia the rates for this municipality are based on the average number of deaths for the years 1949, 1950, 1952, 1953.

Note No. 2: When the rates have been adjusted as if the number of people, in the various age groups were the same in all communities, the death rates for Brantford and Stratford do not differ significantly from the others.

SCIENTIFIC OPINION RE FLUORIDATION

The following summary statements regarding water fluoridation in Brantford have been released by the local medical, dental, and health authorities in Brantford, the Department of National Health and Welfare, and the Council of Research of the American Dental Association.

(a) Medical Staff of Brantford General Hospital, June 24, 1954.

"At a recent meeting of the medical staff of the Brantford General Hospital, the members were asked if they had seen any untoward effects from the use of fluoridated water in this vicinity, with the result that no such observations have been made by any practitioner to the best of our knowledge."

(b) Brant County Dental Society, June 8, 1954.

"The Brant County Dental Society endorses without reservation the fluoridation of the city water supply as an effective means of reducing the incidence of dental caries. In the continual observation of the mouths of the residents of the City of Brantford, the practising dentists have become aware of no untoward effects on the teeth, gums, or supporting tissues."

(c) Dr. W. L. Hutton, Medical Officer of Health for City of Brantford, June 8, 1955.

"Brantford's ten year study of water fluoridation has demonstrated that fluoridation is simple, cheap, effective, and completely safe."

(d) Dr. H. K. Brown, Dental Consultant to Department of National Health and Welfare, July 15, 1955.

"There has been a steady and substantial decrease in the incidence of tooth decay in Brantford children during the period of our study of the effects of water fluoridation in that city. No ill effects of either a dental or a medical nature have come to our attention."

(e) Dr. H. Trendley Dean, Secretary of the Council on Dental Research of the American Dental Association, and the most important single research worker in the development of water fluoridation, June 1, 1954.

"I have always looked upon Grand Rapids, Newburgh, and Brantford as the keystones in the fluoridation tests. They are the oldest and the only ones begun in 1945. Each is entirely independent of the other. When we see the results after 8 years coming out almost identical, the complete independence lends much additional scientific support to the theory of fluoridation."

With reference to fluoridation and periodontal diseases two very careful studies have been conducted in the United States. These are commented on below in a letter written by Dean R. G. Ellis in consultation with Dr. Charles Williams of the Periodontic Department of the Faculty of Dentistry, University of Toronto, to Dr. H. K. Brown, Department of National Health and Welfare, July 18th, 1955.

"At the last meeting of the staff of the Department of Periodontics of this Faculty, there was discussion of the possibility of clinical studies being conducted in Canada concerning the relation of fluorides in a water supply to periodontal disease.

"It was noted that the excellent and intensive study of Russell and Elvove of the U. S. Public Health Service revealed less periodontal disease among adults 20-44 years of age who had consumed water containing 2.5 parts per million of fluorides since birth than was found among a similar group of adults where the water supply had contained no fluoride. The report of Zimmerman, Leone, and Arnold concerning a ten-year study indicated

no significant difference in the prevalence of disease between an adult group which had consumed 8 parts per million of fluoride for thirty-seven years or more, and a similar group who had used water with 0.4 parts per million of fluoride was discussed. This evidence is highly reassuring, as it relates to apprehensions that have arisen on the theoretical possibilities of an unfavourable effect of fluoridation on periodontal tissue . . ." and it is stated that if in the light of the above the Department of National Health and Welfare feels there is need to conduct a long term study . . ." the Members of the Department of Periodontics are willing to cooperate at least in a consultative capacity."

In reply, August 3, 1955, Dr. H. K. Brown of the Department of National Health and Welfare who has been engaged for that Department in the fluoridation studies in Brantford, strongly disclaimed the need for such work.

"It has been suggested in certain quarters that a study of periodontal disease in relation to the presence of fluorides in the water supply be undertaken by us. It would be an interesting thing to do, but to date evidence is lacking, other than some of a highly speculative nature, that such a study should be undertaken. Some good studies have already been done on pure speculation—one during a ten year period—and the findings have revealed no more periodontal disease associated with fluoridated water than with fluoride-free water."

An open letter from Dr. D. Ast, Director of the Bureau of Dental Health of the New York State Health Department to the Editor of the Archives of Pediatrics, June 16, 1954 is appended to this report because of its excellent treatment of the fallacious arguments which have been put forward in opposition to fluoridation. (Appendix A).

SUMMARY

1. A ten-year experiment in water fluoridation initiated in 1945 by the City Health Department of Brantford, and aided since 1949 by the Ontario Department of Health ended in June 1955.

2. The purpose of this study was to determine whether the mechanical adjustment of the fluoride content of the municipal water supply to 1.2 p.p.m. fluoride ion would reduce the rate of tooth decay to the lower level found in regions where the drinking water contains fluoride naturally.

3. The evidence produced by the investigators of the Brantford City Health Department and of the Department of National Health and Welfare, independently show that since the introduction of the fluorine in the water there has been a significant decrease, amounting to approximately 60 per cent in the number of decayed, missing and filled teeth suffered by Brantford school children.

4. At the same time, it has been established that there has been no change in the already low dental caries attack rates in Stratford which has 1.2 p.p.m. of natural fluoride in its domestic water, or in the relatively high rates for Sarnia which has had virtually no fluoride in its water.

5. During the ten-year period since fluoride was added to the Brantford water supply the caries attack rates in that City have decreased to become comparable to those in the natural fluoride region of Stratford. Previously the Brantford City dental caries rates were as high as in Sarnia where there is no fluoride in the water.

6. The tooth decay rate is lowered for both the deciduous and permanent teeth provided the child consumed fluoridated water for about a year previous to the eruption of the particular teeth.

7. These findings have been corroborated by similar studies in Grand Rapids, and Newburgh in the United States.

8. The protection has been demonstrated by workers in the United States Public Health Service to last into adult life.

9. Careful scientific investigations have revealed no untoward effects of fluoridation of domestic water supplies. This absence of any clinically observable ill effects has also been attested to by the practising physicians and dentists in the City of Brantford.

10. The cost of water fluoridation in Brantford has ranged between 12 cents and 17 cents per capita per year using the chemical sodium fluoride but the use of sodium-silico fluoride in the future is expected to reduce this cost to about 6 cents per capita. This small expenditure results in an average reduction in decayed teeth, the treatment of which would cost between 10 and 20 times as much.

11. In the United States, 1,043 cities with a total population of 20,250,000 people now use fluoridated water as a means of reducing the susceptibility of teeth to decay. (August, 1955).

12. The practice of water fluoridation has received the official approval of official health agencies throughout the United States, Canada, and Great Britain.

13. Dr. W. L. Hutton, Medical Officer of Health for the City of Brantford, deserves much credit for initiating the practice of water fluoridation in Canada. Dr. Hutton's own words may be used to summarize the conclusions of the study.

"Brantford's ten-year study of water fluoridation has demonstrated that fluoridation is simple, cheap, effective, and completely safe."

August 23/55.

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APPENDIX A

Dr. John F. Landon, Editor,
Archives of Pediatrics,
45 East 17 Street,
New York 3, New York.

Dear Doctor Landon:

The dental benefits which accrue from ingested water fluorides at a concentration of approximately 1 p.p.m. F have been well documented. (1-3) This documentation is based on studies from areas where fluorides occur at the optimal concentration naturally and from studies where the fluoride ion concentration has been supplemented to bring it up to desired concentration. These studies indicate that if 1 p.p.m. fluoride ion is present in the domestic water supply and is ingested from early infancy on, the dental caries experience will be about 2/3 less than if the water were fluoride deficient. It has also been established that this protection persists through adult life to at least age 44. (4)

Likewise, the safety of ingesting water fluorides at the recommended dosage has been studied and has been attested to by all of the leading agencies and organizations concerned with the health of the public. (5-11)

In a paper appearing in the Archives of Pediatrics, April 1953, Dr. W. J. McCormick has chosen to ignore all of this positive information concerning the efficiency and safety of water fluoridation as a public health procedure to control dental caries. Instead, he has presented some material, much of it out of context, that appears to favor his preconceived ideas. As I shall demonstrate below, many of Dr. McCormick's references are incorrectly quoted, and others have no bearing on the question of domestic water fluoridation. The abstracting of his paper in the Journal of the American Medical Association (12), and in the Journal of School Health, (13) has given his ideas wide circulation, and consequently I feel that an answer pointing out these errors is warranted.

McCormick starts his presentation with the premise that dental caries is an index of nutritional status and then goes on to elaborate on the dangers of trying to control this disease with ingested water fluorides. In his initial premise he ignores all of the work which has been done during the past fifty years and which has led to the overwhelming acceptance of the fact that the relationship of dental caries to Nutrition is not one of a nutritional deficiency. Rather it is initiated by the end product of fermentable carbohydrate in the mouth. No evidence has been reported that clearly shows that deficiencies of vitamin C or members of the B complex lead to increased susceptibility to tooth decay (14), or that additions of these nutrients to diets would decrease the caries susceptibility. Indeed, surveys indicate that lowered susceptibility to dental caries occurs in the presence of single or multiple deficiencies of the B complex and vitamins A and C (15). The validity of the study by Hanke et al (16) cited by McCormick to show the value of vitamin C, is solely dependent on the ability of the examiners to evaluate the progress of decay and the current activity of the carious lesion at each examination and for which no criteria exist.

The work of Nizel and Harris (17) on the relative cariogenicity of New England and Texas foods fed to hamsters is offered to provide an alternative nutritive explanation to the protective effect of fluoride on caries in Texas. The results of this study were preliminary and inconclusive. However, contrary to McCormick, riboflavin was not effective in preventing caries in this work, because it was the New England diet that had the higher riboflavin content. It might be noted with interest that Dr. Harris recently endorsed fluoridation of water supplies as the most effective way to reduce dental decay on a large scale (18).

With regard to the potential toxic effects of ingested fluorides, the paper cites the deleterious effect on cattle grazing in the vicinity of aluminum plants and on humans who work in cryolite mines. It does not indicate the high concentration of fluorides ingested in these cases and leads the unsuspecting to believe these results will occur from drinking water at 1 p.p.m. F. According to Roholm, (19) whose monograph on fluorine intoxication is a classic, the threshold dose of fluorine for cattle is 2-3 mg per kg of body weight. Therefore, a 1,000 pound cow could safely ingest 910-1,365 mgs F daily.

In the cryolite mines Roholm indicated that the miners evidencing spontaneous osteosclerosis caused by ingestion of cryolite dust were getting 0.2-1.0 mg. F./kg body weight daily. Therefore a man weighing approximately 75 kg (165 lbs.) ingested from 15-75 mgs. F. daily. In water fluoridation we are talking about a child ingesting approximately 1 mg daily. A child weighing 15 kg (32 lbs.) drinking a quart of water with 1 p.p.m. F. would therefore be getting about 0.07 mg/kg of body weight daily.

The "very small amounts" of sodium fluoride that Brandl and Tappenier (20) fed to dogs for 21 months amounted to 402.9 grams or 230 grams in 12 months. This is equivalent to the amount of fluoride that would be ingested by a person drinking 600 quarts of water containing 1 part per million fluoride daily for one year.

Dr. McCormick cites the work of Loevenhart and Pierce (21) (without giving the reference) to show the effect of fluoride on body enzymes. This work, published in 1906, indicated that sodium fluoride as 1 part in 5 million (not in 15 million as stated by McCormick) would inhibit liver lipase activity. However, pancreatic lipase activity was actually accelerated by the same concentration of fluoride. These erratic results, coupled with the fact that these results have not been verified in all these years, would therefore appear to be without meaning.

The theory of Stuber and Lang (22) that there is a direct correlation between blood fluoride and prolongation of blood coagulation time was discarded many years ago, (23) particularly since their overall theory of blood coagulation denied the role of thrombin in the process, an untenable positive today.

McCormick in his paper states that Dr. H. K. Box, a periodontist of international repute of Toronto, informed him that he had checked the dental status of a number of subjects who had been using naturally fluoridated water for several decades and found "appalling periodontal disease, with marked morphological changes, such as enlargement of the roots and narrowing or closure of

root canals and pulp chambers, indicating premature aging of the tooth structure making extraction very difficult and prone to root fracture. Many of these cases had severe gingivitis and pyorrhea and premature need for dentures."

I wrote to Dr. Box to confirm this statement and on April 8, 1954, Dr. Box (24) advised me that McCormick must have misunderstood him because he had never made a survey of periodontal or pulp conditions in any area of naturally fluoridated water. He had discussed with McCormick the work of Roholm who had reported on cryolite intoxication.

I checked further into this question of periodontal disease and morphological changes in teeth resulting from ingested water fluorides with Dr. F. S. McKay in Colorado Springs (2.6 ppm F in domestic water for 75 years). Dr. McKay is a periodontist of note and a pioneer in fluoride investigations. His reply dated February 7, 1954 (25) states in part: "I cannot characterize his (McCormick's) assertions as to conditions he ascribes to the use of fluorised water in any way other than as utterly and completely unsupported in my own experience and observation. No such relation between the use of our domestic water (2.6-2.8 pp. fluoride) exists in the tissues as set forth in his article among the inhabitants of this city. But not contented with my own observations I have delayed my reply to you until I could submit McCormick's statement to Dr. Wilton W. Cogswell Sr. of this city. He is a practicing exodontist and oral surgeon here for the past 34 years, an excellent pathologist and author of a textbook on Exodontia. He dismisses McCormick's statements as entirely unfounded and that in his own library of 35,000 cases of dental radiographs he has found nothing resembling what McCormick describes. His opinion is even more emphatic than I have indicated. I know of no one here more capable of passing judgment in this matter than Cogswell. He states further that the morphology of tooth roots is in no wise different than that among non-fluoride individuals contrary to McCormick's statement."

In a study of gingivitis among school age children of three communities in Canada recently published (26), it was concluded that there was no significant relationship between the presence of fluoride in the water supply and the occurrence of gingivitis.

The work of the Smiths (27) is cited to show that the protection against dental caries provided by water fluoridation is largely lost after 21 years of age. Here again, both McCormick and Smith neglect to consider the quantitive aspects of water fluoridation. The data here refer to a small community in Arizona with artesian well supplies providing water with high fluoride concentrations. In the paper cited by the authors (28) the values are 3.8 to 7.1, a disturbing inconsistency. All residents of this community had severely mottled teeth. The problems associated with the fragility, esthetics and restoration of such teeth are well known, but are completely irrelevant to the consideration that water containing one part per million fluoride provides caries protection without any disfiguring of teeth.

The study by Russell and Elvove of the prophylactic effects of ingested water fluorides on adults was cited earlier. (4) This controlled study shows conclusively that the dental benefits last at least through age 44. The DMF rates were 60 per cent lower in Colorado Springs compared with Boulder City (fluoride free). The Boulder City adult residents lost three times as many teeth as did those in Colorado Springs.

The latest reports on the safety of water fluoridation was made by the Commission on Chronic Illness at its meeting in Chicago, March 18, 1954. (29) The report was based on a study by a special committee consisting of Dr. Kenneth F. Maxcy, Professor of Epidemiology, John Hopkins University School of Hygiene and Public Health, Baltimore; Dr. Edward J. Stieglitz, outstanding geriatrician of Washington, D. C., and Dr. Nathan Shock, Chief of the Section of Gerontology, National Institutes of Health, Public Health Service. The Commission reported that there was no evidence that the continued consumption of drinking water containing approximately 1 ppm F is in any way harmful to the health of adults or those suffering from chronic illness of any kind. The report concludes, "The Commission therefore, urges American communities to adopt this public health measure as a positive step in the prevention of the chronic disease, dental caries."

Very truly yours,

David B. Ast, D. D. S.,
Director
Bureau of Dental Health

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PREVENTIVE MEDICINE AND PUBLIC HEALTH IN THE DENTAL CURRICULUM*

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and Lloyd F. Richards, D.D.S., M.P.H.**

During the last decade there have been many evidences that dentists have a growing interest and concern over socio-economic problems, interprofessional relationships, disaster preparedness, community welfare, disease prevention, and the promotion of health. Thus the predictions of Fleming[5] in his presidential address of 1947 are gradually becoming realities. At the same time, these areas of interest and concern are being recognized in dental curricula, but the relative emphasis they deserve is still a matter of controversy. Moreover, there is disagreement as to whether these areas represent a distinct discipline which collectively might be called "preventive medicine and public health" or something else, or whether they represent scattered areas of interest and concern that should be absorbed and integrated into existing courses. Little consolation may be found in the fact that the same dilemma is shared by all of the other professions. Having considered these matters from diverse points of view, we would like to summarize our thoughts and propose one solution to the problem even though we have not had an opportunity to test it fully.

At the outset, it might be worth while to consider the meaning of the terms "preventive medicine" and "public health." Perhaps the best-known and most widely accepted definition of public health is that propounded by C. E. A. Winslow: "The science and art of preventing disease, prolonging life, and promoting health and efficiency through organized community effort." Leavell and Clark have accepted the same statement minus the phrase "through organized community effort" as a definition of preventive medicine. While some authorities believe that these terms are practically synonymous or at least overlap each other to a considerable extent, other authorities contend that preventive medicine and public health are distinct disciplines--the former relating to the activities of individual practitioners and the latter to the activities of specific groups or agencies. Another idea, developed at a recent Conference on Preventive Medicine in Medical Schools, is that the term "preventive medicine" has a broad meaning, and includes public health as only one special part of its general concern with all other aspects of health maintenance.[19] Regardless of these diverse points of view, the fundamental aims and principles embodied in the practice of both preventive medicine and public health are the attainment of a status of health for everyone comparable to that implied in the constitution of the World Health Organization: "Health is a state of complete physical, mental and social well being and not merely the absence of disease or infirmity."

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In the teaching of preventive medicine and public health in professional schools, emphasis has generally been given to the following specific areas of instruction: administration, biostatistics, community or environmental medicine, ecology, epidemiology, geriatrics, health education, history of medicine, industrial hygiene, maternal and child hygiene, medical and public health law, medical economics, medical sociology, mental health, military and disaster medicine, nutrition, public health laboratory and nursing services, radiological health, rehabilitation, safety and accident prevention, sanitary science, and tropical medicine. A similar array of topics appears in the catalogue title and descriptions of undergraduate courses in public health dentistry in the U. S. Dental Schools, as noted in Peterson's recent article on "The Current Status of Public Health Dentistry Courses for Undergraduate Dental Students."[18] It should be apparent that the instruction has not necessarily been limited to these areas; likewise, it should be apparent that all phases of these specific areas of instruction have not been limited to the teaching of preventive medicine and public health. Evidently, the schools of dentistry in this country have included many of these specific areas of instruction in their curricula, but rarely have they brought them together under either the title of "preventive medicine" or "public health."

About half of the schools of dentistry seem to limit their instruction at present to what has been called "dental public health." As stated by the American Board of Dental Public Health, this area may be defined as "the science and art of preventing and controlling dental diseases and promoting dental health through organized community efforts." By analogy, the term "preventive dentistry" which has recently crept into the literature must mean the same thing minus the phrase, "through organized community efforts." Admittedly, preventive dentistry and dental public health are very important and dentists are expected to be more proficient in these areas; however, they certainly want more than just dental health for themselves and for all others—they too want "a state of complete physical, mental and social well being and not merely the absence of (dental) disease or infirmity."

To attain such an ideal, dentists need to have a keen insight and appreciation of professional ethics and other moral codes, including a knowledge and understanding of established laws and regulations. They need familiarity with the history of all phases of medical endeavor to profit from the failures and successes of their predecessors, to assess the deeds of themselves and their contemporaries, and to gain an insight into the future. Dentists need to develop desirable intra- and inter-professional relationships, and, in fact, the same sort of relationships with all persons. To accomplish these goals, they need to develop certain skills in group dynamics, communications, education, leadership and administration. Their success will also depend upon a thorough understanding of many other aspects of the social and economic sciences. Some of these desirable qualities of dentists may remain as mere abstract ideas and ideals unless they are based upon real situations. Thus, it is necessary for dentists to learn much about the health needs of individuals and of communities, to become familiar with the many personnel and material resources available to meet these needs, and to become acquainted with the organization and programs of various health and welfare agencies—both official and voluntary—at the local, state, national, and international administrative

levels. To understand these programs better and to participate intelligently as individuals and as members of organized groups, dentists need basic training in the areas of epidemiology and biostatistics. The latter is also vital for a correct appraisal of observations and an understanding of the scientific method. Being realistic, the dentist in this modern atomic age likewise needs to be guided with the information, attitudes, and skills necessary to render emergency medical and health services, and, as far as possible, to control all forms of violence. If all of these objectives be considered as those common to preventive medicine and public health, one must certainly agree that the dental curriculum should contain a liberal segment of preventive medicine and public health.

A survey made by the American Dental Association in 1930-34 did not reveal what emphasis was being placed upon this segment, but as a result of their investigation, the Curriculum Survey Committee recommended that the dental curriculum include thirty classroom hours of instruction in what might be called "preventive dentistry," and that about 1.8 per cent (or 80 hours) of the 4,367 curriculum hours should be devoted to "public health and hygiene." At the same time, they recommended that 3.16 per cent (or 138 hours) of the curriculum be devoted to "history, ethics, jurisprudence, etc." [12] If all of these hours be consolidated into the present-day, broader concept of "preventive medicine and public health," it would mean a total of 248 hours. In the survey made by the Council on Dental Education in 1941-42, it was found that approximately 169 hours were actually being devoted to this segment—1.00 per cent (or 44 hours) to "public health and hygiene," and 2.87 per cent (or 125 hours) to "history, ethics, jurisprudence, etc." [12] In a more recent survey made by Hadjimarkos,[9] it was found that courses in "public health" were given in 30 of the 34 dental schools responding to his questionnaire. Their instruction in this subject varied from 8 to 51 hours, the average being 22 hours. Of the 30 schools giving courses in "public health," 25 combined what he calls "general" and "dental public health" into one course, while the remaining five schools had separate courses.

Peterson also recently reported a short survey on some aspects of preventive dentistry and public health.[17] Quoting him:

"---about one-half of the dental school administrators report significant attention is given to the subjects of public health and preventive dentistry in one-third or more of the courses in the dental school curriculum. Similarly, about one-half of the dental school administrators report that some attention is given to public health or preventive dentistry in more than two-thirds of the courses in the dental school curriculum. This clearly illustrates two points. First, it is obvious that the amount of attention given to the two fields, public health and preventive dentistry, is significantly greater than it was even ten years ago; and second, the importance of these two areas is strikingly demonstrated by the large number of courses into which their concepts are being integrated and correlated. Nearly all of the schools offer specific courses entitled 'public health' but the schools report a wide selection of courses in which their faculties include the concepts of public health dentistry. In fact, this listing is so extensive that it might be easier to indicate the courses, such as anatomy, dental materials and oral anatomy, as

the few in which no school specifies that they have been able to integrate these public health concepts. On the other hand, courses in pedodontics, orthodontics, periodontia and pathology are most frequently mentioned as common vehicles for providing these concepts in the dental school undergraduate curriculum."

He concludes:

"Preventive dentistry and dental public health can no longer be identified as individual courses in an undergraduate dental school program. They have now become concepts that are essentially synonymous with the primary goals of dental education."

Some educators[6] have gone so far as to state that a special course in public health dentistry is not justified, but that the subject should be integrated into all other courses. The same attitude toward the teaching of preventive medicine in medical schools has often been expressed as an ideal, however, in practice it has been found that what is everyone's business is apt to be no one's business. We agree that the concepts of preventive medicine and public health should pervade the entire curriculum of all professional schools, but we are convinced that specific courses are necessary to crystalize and implement these concepts.

We believe it would be highly desirable to teach preventive medicine and public health across the professions, with combinations of students in dentistry, dental hygiene, medicine, nursing, pharmacy, social welfare, veterinary medicine and possibly others. Likewise, we believe that the faculties for such courses should have appropriate representation from all of these professions. No doubt, it would be easier to develop proper interprofessional relationships in later life if we would do more to develop such relationships while the students were still in school. Courses in preventive medicine and public health seem to offer the greatest opportunity for such endeavor. Meanwhile, we recognize some of the practical problems involved, such as the scheduling of classes and the availability of physical facilities.

Furthermore, we believe that there is a need to continue emphasis on various phases of preventive medicine and public health throughout all the years of professional education. In an attempt to define the basic objectives of such instruction, we offer the following:

1. Information concerning the entire field of health should be presented so that the student will gain a clear insight into the multiplicity, magnitude, and specific nature of existing health problems. Furthermore, these should be considered in terms of the individual, family, community, nation and the world; and also in terms of the past, present and future. The student should also be informed of the action being taken to solve these health problems, with attention focused upon his own responsibilities as a professional, and the interrelationship which exists amongst the different professions.

2. Attitudes should be developed to direct the student's concern to both the individual and the community at large. He should become vitally interested

in the prevention and control of disease and the promotion of health, as well as in the alleviation of suffering and the cure of the sick. He should develop a deep sense of service to others with a spirit of cooperation with all his professional associates.

3. Skills should be acquired to help the student fulfill the above objectives. He needs to know and practice group processes and teamwork, how to be a good leader and a good follower, the principles of administration, the correct means of written and verbal reports and health education. He needs to know and practice elementary mathematical and statistical methods of analysis so that he may be critical in his observations and experiments. The student should likewise acquire certain specific skills in the prevention and control of disease and the promotion of health.

We suggest the following courses for each of the four years of professional education. It should be noted that these courses are not intended for dental students alone, but for students of dental hygiene, medicine, nursing, pharmacy, social welfare, veterinary medicine, and possibly others:

1. "Emergency Medical and Health Services" — a course which introduces the entire program for preventive medicine and public health, and then deals specifically with first-aid, disaster operations, civil defense, military medicine, safety, accident prevention, and the control of all forms of physical violence. Such a course should be given in the Freshman year and correlated with the study of anatomy and physiology in particular. The students should be organized into teams for their practical or laboratory exercises, and leadership for such teams should be provided by the Seniors as described below.

2. "Applied Epidemiology" — a course which includes the general area of epidemiology, biostatistics, sanitation, nutrition and personal hygiene. Such a course should be given in the Sophomore year and correlated with the study of microbiology, parasitology and biochemistry in particular. Again, the students should be organized into teams for their practical or laboratory exercises, and leadership for such teams provided by the Seniors.

3. "Community Health Programs" — a course which deals with the social and economic aspects of health. Such a course should be correlated with the clinical studies of the Junior year, and relate the total problems of the individual patient with the entire health resources of the community. It should give a clear insight into the health and welfare agencies at the local, state, national and international administrative levels—both official governmental and voluntary—and some comprehension of their individual programs. The students should be organized into teams for field observations, and leadership provided from their own ranks.

4. "Health Administration" — a course which deals with the specific attitudes and skills necessary for optimal professional relations. It would include such areas of instruction as group dynamics, leadership, oral and written communications, health education, ethics, jurisprudence and history. Such a course should also serve to summarize the entire program for preventive medicine and public health. This course should be given in the Senior year. The students should gain practical experience in all of the areas mentioned above by serving as the leaders of groups of Freshman and Sophomore students.

With the proper emphasis, these courses would seem to fulfill the major objectives of the recently developed MEND program (Medical Education for National Defense). While the sponsorship of this program by the Department of Defense has so far been limited to medical schools, it is hoped that it will soon be extended to dental schools and possibly other professional schools. In any case, it should now be undertaken on a voluntary basis as far as possible.

If 2 hours each week throughout the year were devoted to each of the above courses, it would mean a total of 30 hours of instruction each semester; 60 hours each year; and 240 hours in the 4-year curriculum. If 2 units were granted each semester, it would mean a total of 16 units for the four years. These hours of instruction and units of credit are essentially the same as those recommended by the Curriculum Survey Committee of the American Dental Association for "preventive dentistry," "public health and hygiene," and "history, ethics, jurisprudence, etc.," back in 1934.

Administratively, a department of "preventive medicine and public health" is almost a necessity to accomplish the mission set forth above. The same conclusion was reached by the Professors of Preventive Medicine:[19] "A separate department of preventive medicine and public health is justified in medical teaching because preventive medicine introduces a new, and, if not revolutionary, at least heretofore neglected, point of view: A primary interest in the conservation of health through prevention, rather than in the diagnosis and therapy of established pathology; and in the case of public health, introduces not only a new point of view, but subject matter that is not within the scope of clinical departments." We believe that such a department should not be limited to the medical school or to the dental school or to any other school where there is a medical center consisting of several professional groups. Instead, the department should be a part of all such schools, and in fact practice what it preaches — " —preventing disease, prolonging life, and promoting health and efficiency through organized community effort."

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THE PRENATAL INFLUENCE OF FLUORIDATION ON CARIES INCIDENCE IN THE SYRIAN HAMSTER*

Lloyd E. Svennvig** and Robert J. Wilson**

I. Care and Handling of the Hamster

Description

The golden hamster (cricetus auratus) is a rodent. Members of this family are found in Europe, Asia, Africa, and America. It is red-gold in color, with an almost white stomach. The animal has black markings on the head and cheeks, and its eyes are black. The hamster has a short, stubby tail and highly developed cheek pouches in which he stores all types of food. The adult is about 6 inches long.

The ideal temperature for hamster raising is 55° to 70° F. Although adult animals can stand temperatures considerably lower, the newborn will perish. Temperature drops to 45° F or lower will cause the animals to go into a state of hibernation.

The molar teeth of the hamster are very unlike its typical rodent-style incisors. The molar teeth are not continuously-growing, nor are they yellow pigmented; rather, they are limited in growth and are white as seen in the living animal. "The basic pattern of the hamster molar crown is a primitive one similar to that of molar forms found in the prehistoric multituberculate, Bolodon."[1]

The histology of the molar teeth of the hamster is very similar to that of many higher forms. The teeth are composed primarily of dentin; the crown, when newly erupted, is completely covered by enamel and the roots by a thin layer of cell-free cementum. As attrition occurs, the exposed primary dentin becomes metamorphosed and secondary dentin is deposited on the underlying pulpal wall. Secondary cementum is progressively deposited on the root surfaces.

Feeding

Nutritional requirements of these animals have been fairly adequately defined. They are extremely susceptible to a lack of vitamins D and K, without which they become severely hemorrhagic and die. Calcium and phosphorus deficiency with no extra vitamin D manifests itself by symptoms similar to rickets. Lack of vitamin E will result in death within 4 to 18 weeks. The diet used for this experiment is listed in detail later in the paper. It was found to be adequate in all respects.

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* Thesis submitted to the Faculty of the School of Dentistry of the University of Maryland in partial fulfillment of the requirements for the degree of Doctor of Dental Surgery.

**When this paper was written both authors were senior dental students. The degree of Doctor of Dental Surgery was conferred upon each of them June 10, 1956.

Sanitation

In order to maintain the health of the colony, certain measures must be taken to keep caging facilities neat and clean. Fresh wood chips should be placed in the cage every 3 to 4 days. Cages containing only one animal may be cleaned once every two weeks. Where three or more animals are maintained in the same cage, a weekly cleaning is necessary. Cleaning includes removal of all old chips, food and other debris, plus a good scrubbing, drying and replenishing with fresh chips and food.

Pregnant female hamsters must not be caged in wire-bottom cages. They must have a solid-bottom cage covered with 1 to 2 inches of wood chips. The mother will devour the entire litter if she is maintained on a wire-bottom cage. The cannibalistic habit once formed will be difficult to break when subsequent litters arrive.

In cages where more than one animal is present, should one die, it seems to be axiomatic that the remaining animals will devour the carcass. This does not mean that the living animals killed the dead animal to devour him. It is also true that the dam will devour any young which succumb.

II. The Research Project

The discovery by F. A. Arnold, Jr.,[2] in 1942 that dental decay is common in the molars of Syrian hamsters fed on a laboratory diet containing large amounts of soft or finely ground carbohydrates and no coarse particles introduced the first possibility of studying experimental caries in animals in the absence of the fracture factor. Investigators who studied experimental caries in the rat relied upon a hard, coarse particle, fracture-producing diet. In these experiments, caries is probably dependent upon the previous occurrence of fractures and thus some question arises as to the applicability of such results to caries in man.

Purpose

The aim of our research was to determine by experiment whether there is any relation between fluoridation of the water consumed by the mother hamster and the caries incidence in the offspring. The results of this project will prove or disprove the systemic effect of fluorine on caries incidence and will shed some light on the theory that fluorine has its greatest prophylactic value while the teeth are still forming.

Procedure

Eleven hamsters were divided into three groups of three females and a male each.

The first group was designated as Group I and was the control group for the experiment. These animals received a water supply which contained no fluorine (distilled water).

The second group received water which contained exactly 2 ppm of fluoride, as sodium fluoride.

The third group received water which contained exactly 50 ppm of fluoride, as sodium fluoride.

All animals were maintained on this water supply for one week before any breeding procedures were initiated, and the females were continued on it until the young were born.

The diet used for all animals throughout the entire length of the experiment was:

Whole wheat flour	30%
Powdered milk	30%
Confectioner's sugar	15%
Corn starch	20%
Alfalfa meal	4%
Salt	1%

The powdered ingredients were incorporated with distilled water into a dough-like mass, and the mixture was then rolled into thin sheets and baked. The result was a substance similar to a type of unleavened bread. Since all animals received this diet throughout the experiment, we can consider diet a constant factor in our determination. All animals received fresh vegetables or fruits several times a week. Among the favorites were apples, carrots, lettuce, and celery.

We allowed the parent hamsters to have an adequate fluorine experience before we started the research work. The fluoridation was continued until the litter was delivered and then only distilled water was used. The litters were maintained on the above diet, and since the mothers were fed the cariogenic diet, it was available in the cage of the young as soon as they were able to take solid food. The animals were weaned at 21 days and were sexed within a week thereafter. These offspring, which are the basis of our experiment, were maintained for 50 days from birth, at which time they were sacrificed.

The heads were removed from the bodies and the majority were held for a single processing. The heads, after careful identification measures, were simmered (not boiled) in a mild solution of washing soda. This softened the flesh to the point where it almost fell away from the hard structures and greatly aided in the cleaning of the skulls. After cooking, the skulls were soaked in carbon tetrachloride to remove any greasy substance which might be left in the bone. The final step in preparing the skulls for study was to place them in 3% hydrogen peroxide for several days to whiten them.

All of the teeth were very carefully studied under 10 and 20 diameters' magnification with a binocular microscope, and all carious lesions were recorded. From these microscopic studies the accompanying chart was compiled.

III. Discussion

We set out to prove the postulate that the fluoride ion exerts, via the systemic route, a definite caries-reducing influence. From the preceding

charts, we draw two conclusions which prove our hypothesis. First, the analysis of the lesions per animal as found in each group reveals the following:

Group I — no fluoride — 9.25 carious lesions per animal

Group II — 2 ppm — 4.64 carious lesions per animal

Group III— 50 ppm — 3.18 carious lesions per animal

We can immediately discern that the fluoride administered to the pregnant female hamster in a concentration of 2 ppm caused a 50.16% reduction in the caries experience of the offspring. The 50 ppm concentration caused a 65.7% reduction in caries. Although this concentration is far beyond the physiologic limits for the human, there was no mottling or discoloration of the hamster teeth. Neither was there any deformity observed in the gross anatomy of these animals. In other words, the fluoride definitely altered the development of the tooth while it was forming in its crypt. By some mechanism (possibly the incorporation of the fluoride ion in the calcium apatite crystals as the wave of calcification sweeps over the enamel matrix), this alteration reduced the susceptibility of the enamel to the decay process.

It is interesting to note that by this experiment we have shown that fluoride does pass the hamster placenta. Since fluoride was the sole variable in this experiment and since it was not available to the offspring, it is certain that fluoride passed from mother to offspring via the placenta to cause the caries reduction observed.

In discussing the results of his work with the topical application of fluorine to the molar teeth of the hamster, Keyes states: "Fluorine treatment seemed to offer some protection for male animals but not for female."[3] It is generally accepted that topical application of fluorides is of very questionable value except in young individuals. However, in this experiment, systemic fluoridation gave good caries reduction in all animals, showing the advantage of the latter method.

There was a greater caries experience on the first molar in Group III than on the first molar in Group II (shown in Chart 4). Ordinarily, the first molar of Group III would be expected to show fewer carious lesions than the first molar of Group II, but since the difference was so minute, it does not alter the validity of the entire result.

IV. Summary

We have shown that the fluoride ion can pass from the mother hamster to offspring via the placenta. This fluoride administered to the parent in the water supply causes a very definite reduction in the caries experience of the young. Our findings indicate that fluoride has a systemic effect and that this effect takes place only on those teeth that are developing at the time of administration.

Animal #	Maxillary Molars									Mandibular Molars								
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
1	3	3	4	0	0	2	0	0	2	0	1	0	0	0	0	0	0	0
2	2	2	2	0	1	3	0	1	2	0	0	2	0	1	2	0	0	2
3	2	2	2	1	0	3	0	0	3	0	1	2	0	0	1	0	1	2
4	0	3	2	1	1	2	0	0	1	0	1	2	0	0	0	0	0	0
5	0	2	2	0	2	2	1	1	0	0	2	3	0	0	1	0	1	1
6	0	2	3	1	0	2	0	0	1	0	2	3	1	0	1	0	0	0
7	2	1	2	0	2	1	0	0	1	0	0	2	0	1	1	0	0	1
8	0	4	4	0	1	2	2	0	1	0	0	2	0	1	1	0	0	1
9	-	-	-	0	1	2	0	2	0	-	-	-	0	0	1	0	0	0
10	-	-	-	0	1	2	2	2	1	-	-	-	0	0	1	0	0	0
11	-	-	-	0	2	2	0	0	2	-	-	-	0	0	1	0	0	0
12	-	-	-	0	2	2	-	-	-	-	-	-	0	0	1	-	-	-
13	-	-	-	0	2	2	-	-	-	-	-	-	0	0	1	-	-	-
14	-	-	-	1	2	1	-	-	-	-	-	-	0	0	0	-	-	-
Total	9	19	21	4	17	28	5	6	15	0	8	17	1	3	12	0	3	7
Average	1.12	2.4	2.6	0.29	1.2	2.0	0.45	0.55	1.4	0	1.0	2.1	0.1	0.4	1.5	0	0.27	0.64
	Group 1 F:- None			Group 2 F:- 2 ppm			Group 3 F:- 50 ppm			Group 1 F:- None			Group 2 F:- 2 ppm			Group 3 F:- 50 ppm		

Caries incidence in molars of Syrian hamsters the mothers of whom during pregnancy were given the specified amounts of fluoride.

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PLANNING FOR FUTURE DEPARTMENTAL NEEDS IN DENTAL HEALTH*

William P. Kroschel, D.D.S., M.P.H.**

The future dental health needs for Tennessee have been recognized to a considerable degree by the dentists of this State. A provision was made two years ago through the far-sighted vision of the dental profession and other interested groups for an expanded dental program in Tennessee. Yet it would be unwise to consider the present program adequate in all respects, for, as scientific knowledge advances, so must its application serve better the people of the State.

While the program of the Division of Dental Health has a broad scope on a State basis, there should be additional coordination in the local departments to have, in some way, a comparative objective plan locally. It is understandable that the State activities are broader than the local program, but unless they are based on the needs of the community, the State performance will not be as effective and utilized as it might.

Few State and county unit directors any longer regard their public health dentist merely as a useful auxiliary, an expensive luxury, or an appendage of a medical specialty. At least one State in this geographical region has made dentistry one of the basic health services of the local health department. The dental program in many localities poses one of the major problems the local departments have to face. The dental problem is also one which can be attacked through preventive measures just as any other preventable disease.

It is not and probably will not be practical for each local health department to employ the services of a full-time dentist. A more feasible scheme would be to have a full-time dentist for three or four counties based on population, say one dentist to every 50,000 - 75,000 people.

In the critical financial condition of many of our State and local health departments the employment of full-time dental personnel would not only be impossible, but, if done, might seriously affect the other basic services of the health department. However, there are in operation several multi-health unit programs jointly financed by State and local funds and directed by one dentist. These programs, by and large, have been successful and valuable to the people of the several areas. More local departments should follow such an example, where feasible and economically practical.

In looking to the future, some serious planning and thought should be given to secure financial aid for local dental programs. Tennessee set the precedent of securing State funds for a dental program. If local funds can be obtained to support dental activities, such money could be used on a matching basis with State funds to provide a comprehensive local dental program. Such a program of participation now exists in several States on a formula basis.

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Health department personnel are aware of the significant downward trend in financial assistance of the Federal Government. To some, the present policy seems an unhealthy situation, but it appears more logical in that the health of the people is the direct responsibility of the county and State governments. Health protection, like police and fire protection, should be a local responsibility. The dental profession of this State realized this fact when it sought money for dental activities.

There are available the tools for measuring the size and nature of the dental problems that now exist in any area. These tools are the DMF, the PMA index and others. Health department people should be familiar with these tools as well as other public health measures. Sound planning should include a definite means by which staff personnel could and would be kept up to date on newer trends in dentistry. For some it would be completely new information, for others only a review. Health department staffs have been guilty in the past of giving misinformation on dental health, or, in many cases, no information at all. Dental health is a part of general health, a part of the health team and should be recognized as such by all members of the staff of a county or State unit.

The present dental needs cannot be met by present or future available dental manpower. To cope in any way with the dental problem widespread use of preventive measures is essential. About one-sixth of the population of this State is served by a water supply containing an optimal amount of fluoride. Controlled fluoridation of public water supplies is probably the best way to prevent dental decay on a mass basis. If additional water supplies are fluoridated at the present rate, it will require some twenty-five to thirty years for the people of this State to realize the maximum benefit of this procedure. Very serious thought and planning should be given to increasing the tempo of promotion in this field. Water fluoridation is a public health procedure which should be entered into by the <u>total</u> health department staff. The entire staff of a local health department, properly informed, can stimulate fluoride programs in many communities. The staff of the Dental Division is available for assistance and consultation to the local communities. Even though budgets do not or will not allow the promotion of a well-rounded program, fluoridation can be promoted at a minimum of staff time and money expenditure.

Topical fluoride programs provide another means to reduce tooth decay by about 40 per cent. Many communities of this State have been visited to demonstrate the use of this procedure. It was hoped that local communities would see the value of such a program and attempt to initiate their own topical fluoride program. Available information shows that two areas in the State have attempted to carry out their own topical fluoride program. To be sure the State program has included topical fluoride demonstrations in several counties, but the State cannot and should not make such a service available to all community areas on a permanent basis. Yes, there is a shortage of dental hygienists to do the job, but there seems to be a trend toward more dental hygienists becoming interested in public health. More important than the shortage of hygienists is the fact that positions are not budgeted for hygienists on the local level. The addition of a hygienist to a local department for the topical fluoride and educational program can mean more to

a county than the "filling or pulling" of many, many teeth.

The restriction of carbohydrates, though not practical as a mass procedure, should be given some consideration. Nurses, health officers, and sanitarians visit schools almost daily. In some cases these workers have suggested that the extra foods be eliminated from the school lunch program. It would seem that at least a beginning could be made in the refined carbohydrate by working with interested school groups. Of course, the restriction from the school program is only the first step.

The concept of remedial care, or charity dental work, usually performed on a haphazard and half-hearted basis, is now an out-dated concept of dental health programs. Remedial care, of necessity, has a place in the total dental plan, but most assuredly should not be the extent of dental activities. It has been demonstrated through at least two different studies that a means of providing incremental rather than postponed care is more feasible. On an annual basis it takes about one-fourth the time to care for dental defects than it does on a postponed basis. The cooperative dental program of this State has served and is serving a good purpose, but it should not be the entire endeavor in a local unit. Realizing it has served a purpose, would it not be better to limit the treatment procedures to entering school children so that eventually the services for children would be on an annual need rather than on an accumulated need basis. Some consideration should be given at both the State and local level in the alteration of all care aspects of the planning, whether demonstration, care or cooperative, that would place the program on a basis of meeting incremental needs.

There is a tendency in local health units for the staff to ask when a dentist or dental hygienist visits a local unit, "How many teeth are you going to pull, how many are you going to fill, can you possibly clean my little girl's teeth today?" Health personnel have, by and large, looked on the dental staff as people who give direct care rather than people who can help community groups realize their needs, plan, initiate, and finally, but most important, evaluate a program. A decided attempt is being made in many areas to get away from the idea of giving or making Johnny or a group do anything, but rather help Johnny or a group do something for themselves. Attention should be given to a plan of helping rather than giving.

Dental health education, although not completely forgotten, has been, shall we say, rather slighted. A county or city health department does not necessarily need a health educator, dentist or dental hygienist to promote dental health education. There are available, through State and national health organizations, resources necessary to bring local staffs up to date on the newer trends in dental health education. Local personnel--health officers, nurses, sanitarians, clerks--could and should do more dental health teaching in their contacts with parents and children. The interest of parents, teachers, and other community groups can be stimulated to seek out and determine the dental health problems and needs in their own communities. Effective dental health education is one means of at least scratching the surface of our dental problems.

Local school and parent groups could be motivated to prepare their own educational materials. There has been produced in this State several pieces of

educational material, pamphlets, films, filmstrips which are factual and useable. However, there is a need for the State and local groups to distribute materials that are applicable to the local situation and which supplement such materials as those produced by the American Dental Association and other groups. More time, effort and money needs to go into the production of visual materials and aids.

Another area in which careful attention should be given is that of over-all dental activity planning. The plan of the Division of Dental Health is objective and capable of being evaluated. There is probably not a single local dental program planned with a given objective in view. Why isn't it just as important for the local dental activities of local communities to be objectively planned as it is for the State? Local communities probably hesitate, and will continue to do so, to aid dental planning materially unless a feeling of value received is established for the money expended. The worth and benefit of health programs of any kind must be proven. Evaluation is necessary to know where you are going, how you can get there, and what can and has been accomplished in any given endeavor. Objective planning is necessary if evaluation is expected and evaluation not only should be expected, but should also be required.

Regardless of budgetary and personnel limitations, dental health activities could be broadened in many local areas. The Division of Dental Health of the State Health Department can serve the local departments effectively if called upon to do so. The U. S. Public Health Service provides technical assistance and consultation to the State and, through the State, to local communities on request. But no one agency at the local, State or National level can carry on an effective, comprehensive dental program on its own. The impetus and stimulus for good dental health must be developed by the local communities. Unless local health workers are interested in the dental health of their communities and provide the spark for organized attack against this problem, the people they serve will continue to suffer the ravages of dental disease and deformity.

An attempt has been made to mention some of the future planning that could be and should be accomplished in dental health. It seems pertinent to summarize this discussion by enumerating the major aspects which should be considered in future planning:

1. Dentistry should be included as one of the basic health services of the local health department since it is a problem and one that can be attacked through preventive measures.

2. Cooperative and objective planning of local dental activities is necessary to conform in a comparative way with the State program. Objective planning is necessary if evaluation is expected.

3. A scheme of employing full-time dentist for three or four counties based on population might be considered to relieve the existent shortage of dental personnel in local programs.

4. In the future, financing of local programs should be done by local departments since the responsibility of health is at the local and State levels.

5. All local health personnel should give additional emphasis to the program of water fluoridation.

6. The complete staffs of all local health departments should be kept informed on newer trends in dentistry.

7. Dental hygienists added to local health departments for the purpose of promoting and operating preventive and educational programs can mean more to a county than the "filling or pulling" of many, many teeth.

8. Remedial dental care programs should be altered to place such activities on a basis of meeting incremental needs.

9. The total staffs of health departments should do more dental health education.

10. The stimulus for good dental health must be developed by local communities.

DENTAL ESCORTS FOR PAROCHIAL SCHOOL CHILDREN OF PHILADELPHIA*

Eileen T. McTamany**

Explanding the school dental program in the City of Philadelphia, while a decided step in the right direction of preventative medicine meant, among other things, the necessity of providing escort service for the thousands of children enrolled in parochial schools. The corps of nurses servicing 150 parochial schools in the City of Philadelphia frequently had to cancel the clinic time allotted their school because of the impossibility of waiting with the children while they were treated by the dentist.

J. M. Wisan, D. D. S., Chief of Dental Health for the Department of Public Health in Philadelphia, and John P. Looby, D. D. S., Supervisor of Dental Service for Parochial Schools, discussed possible solutions for the problem of finding conscientious escorts.

It was at this time that Doctor Looby visited the office of the Ladies of Charity and proposed that the Ladies of Charity who are organized in every parish in Philadelphia Archdiocese might want to help. Doctor Looby explained that the children treated at dental clinics are those whose families are in the lower income bracket, thereby making it a hardship to seek treatment from a dentist in private practice.

The Ladies of Charity, founded by St. Vincent de Paul, is an international organization whose primary purpose in Philadelphia is the spreading of personalized charity; i. e., the giving of one's time, talent and energy in consideration of the needy, handicapped and neglected, was introduced into the Archdiocese of Philadelphia in December, 1953, by His Excellency, the Most Reverend John F. O'Hara, C. S. C., D. D., Archbishop of Philadelphia. Membership totals over 31,000 and each parish has a woman appointed as Parish Representative who is in direct contact with the Central Office.

Eight district meetings, held at the schools, were arranged by the Supervisor of Nurses in Parochial Schools, Miss Gertrude Leddy, whereby all Parish Representatives were acquainted with the City's dental program and introduced to their school nurse.

The program for the meetings included an informative talk by Doctor Looby on the recently expanded dental program of the City of Philadelphia and the necessity of schools fulfilling the time allotted them at neighborhood dental clinics. Four clinics have been installed in Parochial Schools and two more are under way. Six clinics are located in Public Schools. All dental clinics are used by children in both public and parochial schools.

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* Submitted for publication by Dr. J. M. Wisan, Chief, Dental Health Section, Philadelphia Department of Public Health.

**Executive Secretary, Ladies of Charity, Archdiocese of Philadelphia.

From the viewpoint of taxpayers the volunteers were keenly interested in the fact that they were actually seeing their tax dollars being wisely spent when all clinic appointments were filled.

At each meeting the executive secretary of the Ladies of Charity described the vital part their Parish Representatives played in coordinating escorts for their own particular school. The duties of coordinators and the responsibilities to be assumed by escorts were explained to the Ladies of Charity as follows:

Duties of a Coordinator

1. Assigning a sufficient number of escorts.
2. Notifying escorts to obtain a substitute if they cannot keep the appointment.
3. Knowing the name and telephone number of the school nurse.

Duties of an Escort

1. Assuming the responsibility of keeping the appointment or obtaining a substitute.
2. Picking up the children at the time specified.
3. Staying with the children at the Dental Clinic.
4. Returning the children to the parish school.
5. Carry escort identification card when calling for children.

General Information

Each Parish Representative should have an up-to-date list of the Ladies of Charity in her parish. This list may be obtained by contacting the Board Member for each district.

It is suggested that the list be used for the recruiting of volunteers. Mothers of the school children should be solicited, even though they are not Ladies of Charity. These women can be enrolled in the spring.

Carfare will be given to the escort by the school nurse for the escort and the children.

Upon arriving at the school the Lady of Charity must present this identification card before proceeding to the clinic with the children.

LADIES OF CHARITY of the ARCHDIOCESE of PHILA.
1706 Summer Street, Phila. 3, Pa. RIttenhouse 6-5520

This certifies that the bearer of this card has volunteered her services to act as a dental escort for the children in her own parish.

Name:_____

Address: _____

Parish: _____

While originally volunteering as dental escorts, the women soon became acquainted with other medical services available to the children by the Department of Public Health in the City of Philadelphia and many parishes are now active in escorting children to the medical clinics besides assisting with the clerical work involved.

EDITORIALS

WHY ?

When a long list of eminent citizens (professional and lay) supporting fluoridation is published one wonders why there is complete absence of any state and/or municipal public health dentists. Inasmuch as they have carried no small part of the promotion of fluoridation the failure to recruit and list them as supporters of such projects, is, to say the least, unusual.

We are not irked. We are curious.

HERE'S WHY

The query of the foregoing editorial was, of course, based on the publicized list of membership of the New York City "Committee To Protect Our Children's Teeth." Our question was put to one it was felt might know the answer - and did have one. Dr. Arthur Bushel, Director, Bureau of Dental Health, New York City Department of Health, states the omission of state or municipal dental health personnel was deliberate, was "at the request of dentists themselves," and that "it was thought best not to have any people on the public payroll included among the members in the interest of emphasizing this (committee) as a citizens' group."

We are glad to have an answer even tho' we do not completely agree with the reasoning behind it. We question whether there is, or should be, any stigma attached to being on "the public health payroll" that precludes use of such names in support of a dental health measure. And then, too, by golly! public health dentists are citizens .... and have children.

We repeat: we are glad to have the answer. Since Doctor Bushel states also that recently "a few public health dental people have become members" (of the committee) we take it that there was really no reason for our original query.

STATE-DEPARTMENTS OF EDUCATION AND DENTAL DIVISIONS OF STATE DEPARTMENTS OF PUBLIC HEALTH

The recent conference called by the American Dental Association to discuss ways and means by which state dental societies can work more effectively with state departments of education pointed up a very neglected area—especially when one compares the activities of medical societies in this field. Notable amongst activities of the medical societies are the "Highland Park Conferences," which have been sponsored for some years by the AMA and are officially entitled

"Conferences on Physicians and Schools." From these national conferences have stemmed many state conferences of a like nature. All this while, however, dental societies and state dental divisions have sat by--for the most part just watching. It would seem that state dental directors could well step across the street or upstairs or downstairs and say "Hi" to the directors of health, physical education, and recreation in their state departments of education in order to get acquainted, establish liaison for state dental societies, and eventually work out some effective dental health education programs in the schools. This area would seem to be one which has been neglected by many states. The suggested guiding principles developed at the ADA Conference will be awaited eagerly.

D. F. S.

AN IMPORTANT A. P. H. A. MEETING

It is to be hoped that dentist attendance at the 1956 annual meeting of the American Public Health Association will be the largest ever experienced. The program of the Dental Section justifies this hope. But there is an additional reason. Our own John Knutson will succeed to the Presidency of the A. P. H. A. This signal honor should motivate attendance by many, many more dentists than, customarily, find it possible to attend.

Dental public health has never before been so honored. Considering the "youth" of the Dental Section it may be looked upon as remarkable that even now it has had one of its members elevated to the highest office of the parent organization. Pride in this recognition may best be demonstrated by our presence at the meeting where Doctor Knutson assumes his new office.

We fear circumstances in some instances will prevent attendance in spite of desires. May we suggest that in such cases one resort to congratulatory telegrams on the date John takes over the administrative gavel. By attendance or by telegrams let us indicate how right we think the Association was in electing our own John Knutson to the Presidency.

THE HAMSTER ARTICLE

In a recent issue of the Bulletin there appeared an article by Gardner P. H. Foley, Professor of Dental Literature, Baltimore College of Dental Surgery, Dental School, University of Maryland. Mr. Foley stressed the importance of training for dental students in writing and in speaking on dental topics. A footnote by the Editor suggested the future possible publishing of one or more of the undergraduate products of Mr. Foley's instruction.

Elsewhere in this Bulletin that suggestion is carried out by the publication of an undergraduate "thesis" of (at the time it was written) two

Senior dental students. Their paper, we feel, reflects the value of the instruction had from Mr. Foley. But it does more. It contributes something to the store of knowledge relative to the effect of fluorides on dental caries incidence. Perhaps most of all it gives an indication that the future of the dental profession, of dental practice and of dental public health is bright so long as young men with the interest, the research mindedness and the analytical precision of these young authors, are being graduated from our dental colleges.

N O T E S and N E W S

CAMPAIGN LAUNCHED

Medical, dental and civic leaders have formed the Committee to Protect Our Children's Teeth, Inc., to spread facts and correct misinformation on fluoridation of water supplies. Headquarters are at 105 East Twenty-second Street.

The committee's chairman, Dr. Benjamin Spock, said that the campaign will concentrate on New York City, where the Board of Health has recommended the measure repeatedly.

He said that persons in many parts of the country are joining the committee because "New York's decision will be pivotal and perhaps decisive in advancing the measure across the country.

He called water fluoridation "the safest, most effective and cheapest way to protect children's teeth" and added that "up to ten years of successful use of the procedure by more than 1,100 communities across our country have proved its efficiency and absolute safety."

Dr. Spock, who is visiting professor of child development at Western Reserve University, Cleveland, is the author of many books and articles on child care and conducts a weekly discussion on the subject over the NBC television network.

The State Charities Aid Association, 105 East Twenty-Second Street, voluntary organization which is participating with the committee in its educational campaign, is accepting tax-deductible contributions toward a $100,000 budget for "an intensive campaign through all available media," Dr. Spock said. The association has been working for improved health and welfare conditions since 1872.

The committee, still in process of formation, now has more than 125 members.

Vice-chairmen are Mrs. Mary W. Lasker, president of the Albert and Mary Lasker Foundation; Basil O'Connor, president, National Foundation for Infantile Paralysis; Dr. Thomas Parran, dean of the graduate school of public health, University of Pittsburgh and former surgeon general, U.S. Public Health Service, and Dr. William P. Shepard, second vice-president for health and welfare, Metropolitan Life Insurance Company.

Robert W. Dowling, president of the Citizens Budget Commission, is treasurer.

A dental advisory council is being formed under the chairmanship of Dr. C. Raymond Wells, president of the New York Academy of Dentistry and

former president of the American Dental Association.

In a memorandum accompanying invitations to membership, Dr. Spock said that "findings show that children's dental decay is reduced as much as 60 to 65 percent by proper fluoride addition to water supplies." He said that the procedure is now in use in 24 of America's largest cities, including Chicago, Philadelphia, Milwaukee, Baltimore, Cleveland, St. Louis and Washington, D. C.

Describing the need for a public education campaign, Dr. Spock said: "Before obtaining full benefits from any stride forward, there is usually an interim between possession of knowledge and its general application for public benefit. Perhaps the largest gap we now know how to close is in prevention of tooth decay."

He said that fluoridation is not yet well enough understood by people whose children would benefit and that "what we do or fail to do in imparting information and winning understanding affects the future of boys and girls now being born."

"Public ignorance about these facts is serious," he said. "In World War II, because their teeth were below minimum acceptable standards, ten percent of our men did not qualify for military service. Tooth decay is man's most common persistent ailment, afflicting 95 percent of all adults and 80 percent of children in their first six years. Dental health affects nutrition. It profoundly influences many aspects of physical and mental health.

"I wish dental health were simply a matter of watching the spread of water fluoridation as rapidly as boards of health recommend the procedure. But it is not that simple. When it is being considered for the first time, people want to be assured that it is safe, and this takes some time and discussion. Some of the discussion occasionally gets out of hand with regrettable consequences, spreading doubts and confusion which benefit no one."

Dr. Spock said that fears of fluoridation are "groundless" but that they can become "epidemic."

"No valid evidence has been offered to support these claims (of dangerous effects of fluoridation). And yet in most cities where the issue is joined, the scare campaigns delay acceptance of what is considered the greatest public health advance in the past 25 years."

DR. SEBELIUS JOINS W. H. O.

Tennessee's state dental director, Dr. Carl L. Sebelius of Nashville, has been appointed dental officer for the World Health Organization, and for the next two years will direct the W. H. O. dental health program from Geneva, Switzerland. He has been granted a leave of absence by the Tennessee Department of Public Health, whose dental division he has headed since 1942.

Dr. Sebelius and his family sailed from New York on June 1 on the French liner Liberte'. The W. H. O. dental section was established last year, and he will direct the dental health activities in five of the six W. H. O. regions which comprise a total of 96 nations. W. H. O. has a regional dental director for North and South America , Dr. Mario M. Chaves of Brazil, whose headquarters are in Washington, D. C.

Dr. B. F. Gunter of Nashville has been appointed acting dental director during Dr. Sebelius' absence from Tennessee.

A native of Norcatur, Kan., Dr. Sebelius received his dental degree from Northwestern University in 1934, and the M. P. H. degree from the University of Michigan in 1942. He was assistant dental director in Tennessee from 1936 until 1942.

Until his recent resignation, Dr. Sebelius had been chairman of the Association's Subcommittee on Civil Defense. He was for eight years chairman of the Council on Dental Health of the Tennessee State Dental Association, and for three years editor of the Journal of the Tennessee State Dental Association. He has served both as president and secretary of the American Association of Public Health Dentists, and in 1953 was president of the Nashville Dental Society.

In 1951 Dr. Sebelius studied the dental health programs of Norway, Sweden, Denmark and England under a W. H. O. fellowship.

Editor's Note -- Dr. Sebelius would appreciate hearing from his many friends while on assignment with W. H. O. The following is his address:

Dr. Carl L. Sebelius
World Health Organization
Palace of Nations
Geneva, Switzerland

STATEMENT PRESENTED BY
MR. FAUST, AMERICAN WATER WORKS ASSOCIATION, AT
THE NEW YORK CITY COUNCIL HEARING ON FLUORIDATION
JANUARY 26, 1956

My name is Raymond J. Faust, Executive Assistant Secretary of the American Water Works Association since February 1951. The Association is the largest group (11,000) of organized professional water works men in the world. This year it is celebrating its 75th anniversary. Prior to my present activity, I was employed by the Michigan Department of Health as a sanitary engineer in charge of public health supervision of over 600 water systems in the state. That tenure of service covered almost 28 years, from June 1923 to February 1951.

I am a graduate of the engineering school of the Pennsylvania State University, having earned a B. S. and a C. E. degree. I am a registered professional engineer in both Michigan and New York states.

While I was in Michigan, the Grand Rapids experiment in water fluoridation was developed, started and carried on. I participated in all phases of this program. It is of interest that this hearing is being held almost on the 11th anniversary of the starting of fluoridation in Grand Rapids. It will be recalled that fluoridation was started on January 25, 1945.

I am appearing here with the counsel and consent of the President and Secretary of the American Water Works Association:-

President:- Mr. Frank C. Amsbary, Jr.
Vice-President and General Manager
Long Island Water Corporation
733 Sunrise Highway
Lynbrook, L. I., New York

Secretary:- Mr. Harry E. Jordan,
American Water Works Association
521 Fifth Avenue
New York 17, New York

My selection to represent the Association was based entirely on my experience with fluoridation since its inception and the fact that in 1949 I was appointed a member of a Special Committee on AWWA Policy re Fluoridation of Public Water Supplies. That Committee was composed of the following members: -

Dr. A. P. Black, Chairman
Head, Dept. of Chemistry
University of Florida
Gainesville, Florida

Dr. A. E. Berry, Director
Sanitary Engineering
Ontario Dept. of Health
Parliament Bldgs.
Toronto, Ont., Canada

Mr. H. A. Faber
Water and Sewage Works
155 East 44th St.
New York 17, New York

Mr. W. V. Wier, President
St. Louis County Water Co.
6600 Delmar Blvd.
University City
St. Louis 5, Missouri

Mr. L. H. Enslow, Editor
Water & Sewage Works
155 E. 44th St.
New York 17, New York

Dr. H. Trendley Dean, Sec'y
Council on Dental Research
American Dental Association
222 East Superior St.
Chicago 11, Illinois

and myself.

The Committee produced a statement of recommended policy and procedure which was approved by the Board of Directors of AWWA on May 29, 1949. Both policy and procedural statements have been reviewed and reaffirmed by the Board in 1951, 1952 and again in 1955.

I am appearing here for the purpose of putting into the record of these hearings, the Association's expression of policy on Water Fluoridation which follows:-

> "In communities where a strong public demand has developed and the procedure has the full approval of the local medical and dental societies, the local and state health authorities and others responsible for the communal health - water departments or companies may properly participate in a program of fluoridation of public water supplies.
>
> "Recommendations for fluoridation are prerogatives of the dental, medical and public health groups. When the proper authorities approve the treatment, it then becomes the function of the water works utility and industry to follow through willingly and intelligently where proper controls are assured."

In addition to the above policy statement, I would like to put into the record that:-

> "The Board holds the opinion that the water utility may properly render this additional service when it has: (1) all authorizations necessary to protect the utility in its practice of fluoridation; and (2) assurance that the utility will be compensated for the additional cost it will incur."

The recommended procedural statement comprises eight sections entitled - (1) Handling Fluoridation, (2) Responsibility for Fluoridation, (3) Liability Involved, (4) Steps in Authorization, (5) Disposition of Cost, (6) Items of Cost, (7) Application of Fluoride, and (8) Control. Rather than discuss each of these items with you at the present, I will provide printed copies of the brochure for the record.

At the end of 1955, to the best of my knowledge, there were 1,127 communities in the United States using water treated with the optimum amount of fluoride. These communities have a population of more than 22 million people. There are also about 4,200,000 in the country using water which naturally contains more than 0.70 ppm of fluoride. Thus the total of both groups is in the neighborhood of 26,300,000. This number comprises over 23 percent of the 115,000,000 people in the country dependent on public water supplies.

In contrast there are only five municipalities in the country operating defluoridation plants to reduce the high natural fluoride content (3.0 ppm and over) of their water supplies to the optimum amount. These five plants serve a total of only 5,000 people. It is conservatively estimated that this small group of people represents only about 17 percent of the population in the United States, whose water supplies need defluoridation. This phase of the total program is usually not well understood.

Fluoride application to water presents no unusual problems. The chemical feeding equipment available for fluoride application is standard, accurate and dependable. With proper care and maintenance such equipment will give satisfactory service for many years.

The control of fluoride application presents no more difficulties than the control of a number of other water treatment chemicals. To the trained water plant operator, the control of all types of chemical treatment is a serious responsibility. Thus the control of fluoridation is not taken lightly but actually presents no greater difficulties to the operator than he is faced with routinely.

It is of interest to note that no serious control problems have arisen to date at any of the towns that are fluoridating. Those towns run the gamut in size from communities with less than one thousand people to towns as large as Philadelphia, Washington, Baltimore, St. Louis, etc. This record in my opinion furnishes conclusive proof of the quality and dependability of the feeding equipment, the accuracy of the control tests, and the conscientiousness and high qualifications of the operating personnel. The water industry has had a continuous need for quality control of product for many years to produce a bacteriologically safe supply. Thus the application and control of fluoridation presents no unusual problem, but can be taken in stride.

The application of 1 ppm of fluoride to a water supply has no effect on its taste and odor, nor does it have an adverse effect on industrial processes. These facts have been substantiated in every case where fluorides are applied.

I wish to thank the council for the opportunity of presenting this information.

ANALYSIS

An interesting and informative report of a survey on "American Communities Reported Adopting, Then Rescinding Fluoridation" has been received. Too lengthy for publication in the Bulletin, it is suggested that readers desiring an excellent reference material try to secure a copy from the sponsors of the survey, the Bureau of Municipal Research, Syracuse, New York or by writing a Public Health Service Regional Office.

SUITS

Informative and a good reference material is the "Summary of Litigation on Fluoridation" revised up to July 1, 1956 and available through P. H. S. Regional offices. Courts have been generally favorable to fluoridation in cases brought on every conceivable basis. The "pro" won-lost average is much better in this court league than it is in the contests involving referenda.

INVITATION

The Editor is probably one of the many who have received invitations to join "The Royal Society of Health" of Great Britain. Those unacquainted with the organization and who are desirous of joining may obtain data by writing the Society secretary, P. Arthur Wells, 90 Buckingham Palace Road, S.W.1, England.

MILLHOFF RETIRES

Dr. Harry B. Millhoff, Chief, Dental Division, Ohio Department of Health retired from that position on August 1st. Harry's many friends in the A.A.P.H.D. will learn of his retirement with regret - mingled with sincere hopes for his having many, many years of enjoyable leisure.

A.P.H.A. DENTAL HEALTH SECTION

The program for the Section on Dental Health at the ninety-seventh annual session of the American Dental Association at Atlantic City, Oct. 1-4, has been announced. The section will meet at 9:30 a.m., Wednesday, Oct. 3, in Room B of the Atlantic City Auditorium. Dr. Polly Ayers of Birmingham, Ala., director of the Jefferson County Health Department and section chairman, will preside.

The program, it was pointed out, is being designed, first, to build up the section as a means of communication to the entire profession - particularly to those individuals whose dental society responsibilities are centered in dental health activities - second, to call attention to the fact that the dental health of the public is the responsibility of all elements of the profession and is not limited to a particular group of specialists, the public health dentists.

Dr. Maurice J. Friedman of Little Rock, dental director of Arkansas, will discuss "Responsibility of the Dental Society in the Field of Public Health"; Dr. Byron W. Bailey of Hanover, N. H., member of the Council on Dental Health of the American Dental Association. "Role of the Individual Practitioner in the Field of Public Health," and Dr. Donald J. Galagan of Washington, D. C., assistant chief of the Division of Dental Public Health of the Public Health Service, "Role of the Public Health Dentist in the Field of Public Health."

A "MUST" REFERENCE

For a classic example of the calibre of some anti-fluoridationists and for an equally classic example of rebuttal of such false, misleading and unsupported nonsense all dental health personnel should have reference copies of the "anti" editorial written by one Russ La Vine (published originally in the Highland Park, Illinois, News) and the replies to the La Vine diatribe written by Mr. W. Earl Hall, Editor of the Mason City, Iowa, Globe-Gazette and by Dr. Charles Henshaw, Iowa state dental director. Orchids are due Mr. Hall and Dr. Henshaw and scallions due La Vine whose capability to write on the subject is indicated by his spelling of his editorial subject. He spells it: "FLOURIDATION".

Dr. Henshaw's rebuttal is a terse statement that clearly demonstrates the falsities of the La Vine report. Mr. Hall minces no words in designating La Vine's report as "a bare faced lie", as a "lie out of the whole cloth" and as filled with "misrepresentations" but also goes on to rebut other "anti" arguments and to give a splendid resume' of the background, the validity and the desirability of fluoridation.

THOSE NON-COMMITTAL LETTERS

Health departmens all over the country have been receiving letters from individuals in various states in which inquiry is made relative to the "experience of communities"....."in the matter of artificial fluoridation of communal water supplies". The letter writers' particular interest seems to be in regard to those communities "which have rescinded or rejected outright the question of fluoridation by referendum or otherwise".

No definite indication is given of the pro or con attitude on fluoridation of these letter writers. However, the very failure to identify one's opinion seems to indicate the requested data will be used (when possible) as anti-fluoridation propoganda. While replies from health departments can scarcely be avoided, it seems feasible to suggest that all replies contain an emphatic endorsement of fluoridation as a worthwhile health procedure.

ANNUAL MEETING

The Ozone Room of the Hotel Dennis will be the 1956 A.A.P.H.D. annual meeting place on Sunday, September 30th according to report from Dr. Earl Ludlam, Chairman of Committee on Arrangements . The Program Committee, Dr. J. M. Wisan, Chairman has submitted the following program:

BUSINESS MEETING

9:30 a. m. to 11:45 p. m.

F. M. Erlenbach, Pres.
presiding

Greetings to visitors

Call to order by the President

Adoption of minutes

Reports of officers & committees

Unfinished business

New business

Presentation of plaque to Past-President

Election of officers

11:45 a. m.

Meeting of new Executive Council

SCIENTIFIC PROGRAM

2:00 p. m. to 5:00 p. m.

- I -

Welcome by Daniel Bergsma, M. D.,
Commissioner of Health
N. J. State Dept. of Health

- II -

2:15 p. m.: "Referenda for Water-Fluoridation"

Charles A. Metzner, Ph. D.,
Assoc. Professor of Public
Health Economics, Univ.
of Mich. School of
Public Health

Panel Discussion on Water-Fluoridation

Moderator: Cornelius M. Bowen,
Public Health Advisor,
Regions I and II,
Dept. of Health, Education
and Welfare,
New York, N. Y.

4:00 p. m. - Recess

4:15 p. m. - Review of University of Michigan Workshop

Moderator: Lawrence E. Van Kirk, Jr.,
Division of Dental Resources,
Dept. of Health, Education & Welfare,
Public Health Services,
Washington 25, D. C.

TELEGRAMS

In the name of the A.A.P.H.D. telegrams were sent by President Erlenbach to U. S. Congressmen of his State (Connecticut) requesting their support of Congressman Fogarty's (R.I.) motion to grant the full amount of requested funds for dental research. Maryland Congressmen were likewise importuned to give support to the motion by telegrams from the dental director and state and local dental organizations. Without report of how many other directors pressed their

Representatives for support, it may be assumed that the passage of the motion was in part due to this activity.

HYGIENIST WANTED

With a salary range of from $414.00 to $496.00 per month there is an opening for a qualified dental hygienist in the Contra Costa County (California) Health Department according to word received from Zachary Stadt, director of that department's Dental Division.

Qualification requirements may be obtained by writing Dr. Stadt, P. O. Box 871, Martinez, California.

"TIPS"

Congratulations are due Georgia for its brand new newsletter for dentists of that state. Intended to keep the dental profession informed of "current events concerning dentistry and dental public health" the leaflet "Tips" should serve well to tie together the activities of organized dentistry and public health.

PROOF ON PROOF

A survey after five years of water fluoridation in Milan, Tennessee shows a reduction of nearly 60% in the incidence of dental decay among six year old children of that community according to a news report on April 7, 1956 in the Fulton, Kentucky "Leader". Gratifying as additional evidence to pro-fluoridationists the report should be particularly pleasing to Dr. A. H. Trithart, Regional Dental Consultant, of the Tennessee State Department of Public Health who "spearheaded" the fluoridation project in Milan.

SPEAKING OF TENNESSEE

The Editor has not had a line from Carl Sebelius who has been designated as "Foreign Correspondent" of the Bulletin. Come, come, Carl! No contributions, no remuneration (?!)

MENTAL TELEPATHY

Just following the mailing of copy to the Publisher a card was received from Carl. He reports: a pleasant trip, including a drive through France and a two day visit in Paris; considerable travel seems to confront him in his new assignment; weather cool, and that he reads the Bulletin.

CAMBRIDGE STUDY

The P.H.S. study in Cambridge, Maryland complementing those of Woonsocket, R. I. and Richmond, Indiana has nearly completed its "second round" of dental care for the children of that community. Premised on the fact that the Cambridge water supply has had a natural F content of 1.0 ppm for nearly twenty years, the study is directed at determinations of the degree of lesser incidence of dental decay as compared with findings in "non-F" communities and, second, how much less time is required to correct accumulated and incremental defects.

Initiated originally by Frank Law of the P.H.S. and Dick Leonard the study is now being conducted by Dr. W. J. Putnam of the P.H.S. Assisting him is Miss Helen Sheary, D. H. and, as dental assistants, Mrs. Jean Cordy and Mrs. Betty Marshall.

EXPENDITURE

It is hoped no harsh disapproval will develop over the fact that last minute arrangements were made for the presentation of a "bon-voyage" gift to Carl Sebelius when, on June 1, he and his family left New York City for his assignment with W.H.O. Your Editor assumes responsibility for the idea and used President Erlenbach and Art Bushel as emissaries carrying the good wishes of the A.A.P.H.D.

IMPORTANT ANNOUNCEMENT

July 26, 1956

Roy Smiley, D.D.S., Secretary-Treasurer, A.A.P.H.D.
Indiana State Board of Health
Indianapolis 7, Indiana

Dear Roy:

We received the following communication this morning from Thomas L. Hagan, Dental Director, Dept. of Health, Education and Welfare, Bureau of State Services, Washington 25, D. C.:

"The Health Amendments Act of 1956, which was passed by the Senate on June 11, 1956 and by the House of Representatives on July 23, 1956, authorizes the Public Health Service to establish a program of traineeships for graduate public health training of Professional public health personnel. The only difference in the House and Senate versions is the duration of the program authorized under certain titles of the act.

"The Surgeon General has requested that a preliminary announcement be made of the establishment of this new Traineeship Program, contingent upon final enactment of the legislation, and appropriation of funds by the Congress for the present fiscal year.

"The public health traineeship provisions of the Act are designed to supplement - not replace - the training activities currently being carried on by State and local health agencies. Priority will be given to those who are newly entering public health work or who have been employed for only a year or two. This should have the effect of making public health careers more attractive to young people just finishing their basic professional training. Should funds become available for the school year beginning in September 1956, however, it may be necessary to accept some applicants who have been employed for a longer period in order to get the program under way as early as possible.

"With respect to provision of training for dentists under this program, only specialized graduate or public health training will be provided—not the basic preparation required for licensing. Dental Hygienists will be considered for post-professional training to provide additional selected study in public health after the basic certificate curriculum. Applications also will be accepted from dental hygienists eligible for training in graduate schools of public health.

"An expert advisory committee is being appointed on administration of the traineeship program, including the development of program standards and policies. Policy and procedural materials will be widely distributed as soon as they are completed. Information regarding stipends, allowances, submission of applications, etc. will be available from the Division of General Health Services, Public Health Service.

"Because of the late enactment of this legislation, it will be necessary to move quickly if funds are made available this year."

Can we alert the membership of the American Association of Public Heal th Dentists as soon as possible so that it anyone is interested they will take advantage of this opportunity? I shall send a copy of this letter to Dick Leonard and ask that he digest the high points of this material for inclusion in the next publication of the Bulletin.

I shall also send a copy to Fred Wertheimer, and a short note of thanks to Tom Hagan for bringing the matter to our attention and suggest that he bring it up at the Executive Session of the A.A.P.H.D.'s when we have our Annual Meeting in New Jersey. By that time we should have a lot more details.

Cordially,

/s/ F. M. Erlenbach, D.M.D.
President

gw
cc: Dr. Leonard
Dr. Wertheimer

FLUORIDATION EDUCATION

From Zach Stadt, dental director in the Contra Costa County, (California) Health Department comes a copy of that county's "School Bulletin" from which is taken the following from the "Superintendent's Column" and which expresses opinions of the Superintendent, Mr. B. O. Wilson.

"There are many weeks of the year identified as appropriate time for special observance of events, or for special emphasis on general problems. Not the least important of these weeks is Dental Health Week. Its observance in the East Bay Area was opened by a conference in Berkeley sponsored by the Dental Association. The program not only emphasized the importance of solving dental health problems but also focused particular attention on the advantages of adding fluorides to drinking water in an amount to bring that water up to a standard sufficient to help maintain dental health by preventing caries. It was my privilege to participate in that program. In order that the profession may know of the point of view I expressed I present the following review.

"First of all, I absolved the profession from any responsibility for what I said by indicating that they were my personal beliefs because I did not know the consensus of the profession. On the other hand, I presumed to express confidence that many of the profession would be in agreement. This I said in part.

"The public schools should not be used as a vehicle for a crusade for anything. School children should not be given information in order that they

might carry a "message" to parents. Possibly the one exception should be having children remind parents that they should vote, and, in such instance, when to vote and not how to vote.

"The responsibility of the schools is to help youngsters to learn facts and acquire the skills and knowledge which enable them to evaluate evidence. Now, what is the basis for selecting the evidence that is to be taught? Some people believe the earth is flat. We do not teach youngsters such a concept, because people of authority, and a preponderance of the evidence, indicate it to be false. There are many kinds of doctors. I would not refer to a doctor of divinity for expert advice on nutrition. Neither would I accept the design of a bridge laid out by a doctor of education.

"I am not a dentist. Neither am I a physician. It would seem that in matters of health and in issues concerning dental hygiene it is necessary for us to accept the testimony and the evaluation of experts concerning these problems. This I do and conclude that we should teach the facts of the evidence concerning the fluoridation of drinking water. We should present the evidence to the best of our ability and identify to youngsters the procedures by means of which evidence and testimony should be considered. Vaccination for smallpox has long since ceased to be a political issue, and in the name of general welfare the police powers of the state may be exercised to compel immunization in case of epidemic. Chlorination of water, as far as I know, is no longer debated. It would seem rather that the fact that we debate politically the issue of fluoridation of drinking water would appear to be a regression. It is a current example of the need for teaching even better methods of evaluating the evidence and respect of expert testimony. It might well be that in the heat of campaign and intensified advertising it would be well to help youngsters to realize that the noise you make with your mouth is not necessarily meaning what you believe it to mean and what one reads can very properly be scrutinized for accuracy. We in the schools can only continue to work on the problem."

F. in S. F.

Santa Fe, New Mexico began fluoridating on June 4, 1956. Santa Fe is the second city in New Mexico to begin controlling the amount of fluoride in its water supply. A third city in New Mexico might be classed as having controlled fluoridation: when Springer, New Mexico's surface supply was proving inadequate, exploratory wells were put down and one well with an extremely high fluoride content was found. By the judicious combination of this high fluoride well water with the fluoride deficient surface supply, the optimum amount of fluoride has been secured. This combination was achieved by controlling the pumping from the well and the size of the pipe to the juncture with the surface supply. The pipe size is so set that it would be impossible for too much fluoride to be mixed in. It is estimated that well over 50 and perhaps even 60 per cent of the state's population is now drinking water with at least

optimum amounts of fluoride.

WORKSHOP

Mr. Perry Sandell of the American Dental Association served as a consultant at a school health workshop held at the Flying B Ranch near LasVegas in conjunction with Highlands University and in cooperation with the New Mexico Department of Public Health, New Mexico Department of Education and the New Mexico State Dental Society. This workshop was held for eight solid days from June 13-20.

FIELD TRAINING

Dr. Luis Sanchez of Lima, Peru, who has just completed his Master's of Public Health Degree from the newly-formed School of Public Health in Puerto Rico, is field training with the New Mexico Department of Public Health, the Division of Indian Health of the Public Health Service in Albuquerque and Denver, and the Tennessee Department of Public Health.

ATTRIBUTE?

An advertisement in the classified section of the Santa Fe New Mexican appearing recently under "houses for sale" advertised a house for sale which was just outside the city limits with its own "deep well with pure water" for those people who did not want to drink the city's fluoridated water.

ANOTHER WORKSHOP

The Idaho State Dental Society in cooperation with the Idaho Board of Health held a two-day workshop at Shore Lodge on Payette Lake in McCall, Idaho in May. Some 40 of Idaho's 250 dentists participated. Under very pleasant circumstances and surroundings, a great deal of basic dental public health decisions were reached. Participating in the conferences as consultants were Dr. David Brock, formerly Chairman of the Council on Dental Health of the

American Dental Association, from St. Louis; Miss Elizabeth Warner, Supervising Dental Hygienist, Division of Dental Public Health, Public Health Service, Washington; and Dr. David F. Striffler, Director, Division of Dental Health, New Mexico Department of Public Health, Santa Fe. This year's Idaho Workshop was the first one held since 1949. The 1949 Workshop resulted in the formation of a dental division within the Idaho Board of Health. This year's workshop was aimed primarily at evaluating progress since 1949 and making plans for the next few years. It was a type of experience which other state dental directors might well emulate.

RUMOR

It is rumored that George Waterman will be replacing Vernon Forney as Chief Dental Officer of the Division of Indian Health of the PHS. (Ed.'s Note: Confirmed!)

COOPERATION

On June 8 and 9 the American Dental Association sponsored a conference between representatives of state departments of education and state dental societies. It was a small conference with about five directors of Health, Physical Education & Recreation from state departments of education and about five dentists from around the country sitting down together in the ADA headquarters under the chairmanship of Perry Sandell to discuss ways and means which state dental societies could employ to work more effectively with state departments of education. Several suggested principles were forthcoming and a final report will be submitted to the Bulletin for publication.

EARMARKED FEDERAL FUNDS FOR STATE HEALTH DEPARTMENT DENTAL PROGRAMS.

The committee of the AAPHD which has been working on the promotion of earmarked federal funds for state dental programs has been achieving notable success. Wes Young reports that many resolutions have been coming in from various state dental societies, councils on dental health, and legislative committees endorsing such earmarked funds.

VALE ATQUE AVE

Fran Walters, Regional Dental Consultant out of the Denver office of PHS is back at his desk following the completion of his MPH Degree at Hopkins. Welcome back, Fran. (And "Bal'mer" says "goodbye")

TRANSFER

Miss Rhea Meyers of Pawtucket, R. I., has been employed as a dental health consultant with the New Mexico Department of Public Health, Division of Dental Health, effective August 1. Miss Meyers comes to the Department with a background which fits her admirably for the position. She obtained her certificate in dental hygiene from the Forsythe Dental Infirmary in Boston, worked in private practice for about 10 years, secured a Bachelor's Degree in education at Boston University and then went on to obtain an MPH Degree in Health Education from the University of Michigan School of Public Health. Miss Meyers will take her field training with the Department.

CHANGE

Harry Bruce, an Associate Editor of this Bulletin, who was on leave from the Tennessee Department of Public Health as a regional dental director with PHS for his 24 month stint, has decided to stay on in the Public Health Service and will be the regional consultant operating out of the Charlottesville, Virginia, Public Health Service Regional Office III, as of August 1. Welcome! Harry.

CONSULTANTS

Twenty-five New Mexico dentists attended a two-day training and orientation session for dental health consultants to the New Mexico Department of Public Health on May 18 and 19 in Santa Fe at the Department headquarters. Harry Bruce, then with the Atlanta Regional Office, gave the boys the low-down on dental public health--its technics and its lingo. Miss Betty Warner of the Washington office discussed dental health education materials and methods, and Professor Fred Chreist of the University of New Mexico discussed technics of speaking before groups such as P-TA's and luncheon clubs. These 25 consultants will be available to district health officers on request to help solve various dental health problems.

FLUORIDATION

Chicago started fluoridation May 1. There are now about 25,000,000 persons in about 1200 communities in 45 states and the District of Columbia drinking controlled fluoridated water. Arizona, Nevada and Utah are the only states without a controlled fluoridated water supply.

JAYCEES PROJECT

California Jaycees have adopted fluoridation as the organization's "project of the year."

DENTAL BACTERIOLOGY

Many dentists from over the state of Tennessee are availing themselves of the services of the dental bacteriology laboratory. Through the month of April 826 specimens had been submitted for caries activity tests. Of these 826 tests, 627 or 75.9 per cent were positive, 184 or 22.2 per cent were negative, and 15 or 1.8 per cent unsatisfactory.

The Snyder tube test was used on 529 specimens, 453 or 85.6 per cent being positive, 74 or 13.9 per cent negative, and 2 or 0.37 per cent unsatisfactory. The Lactobacillus plate count was made on 297 specimens, 172 or 57.9 per cent of which were positive, 112 or 37.7 per cent being negative, and 13 or 3.3 per cent were unsatisfactory.

It is hoped that all dentists will make use of this most worthwhile diagnostic service.

NATURAL FLUORIDE WATER SURVEY*

The now generally accepted fact that the use of water containing 1.0 part fluoride per million parts of water will reduce the incidence of dental decay in children by up to 60% or more has raised the question of what degree of

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*From the Maryland State Department of Health Monthly Bulletin.

benefit may be expected from use of waters containing lesser amounts of fluoride. To answer this question the Division of Dental Health of the Maryland State Department of Health working with personnel of the U.S.P.H.Service is conducting a study of dental conditions among children in communities the water supplies of which, according to analyses made by the Department's Division of Sanitary Engineering, have fluoride contents ranging from approximately one tenth (0.10) part per million to nine tenths (0.90) part.

Started late in the past school year the survey is not yet completed and will be continued when schools re-open. However, figures already obtained are of interest since they indicate (1) the desirability of adding fluoride to waters containing low amounts of the chemical and (2) the lack of necessity of adding it to those waters whose natural fluoride content approaches in amount the recommended 1.0 ppm.

The accompanying table lists the communities in which surveys have been made, cites the reported fluoride content of their water supplies and shows the average number of teeth found filled or extracted (indicating previous decay) and found presently decayed. The statistics cover the findings among white and negro school children known to have resided in the specified community since birth, the period during which teeth are being formed and, consequently, the decay deterring benefit of fluorides is to be anticipated. The communities are listed in a descending order of water F. content, permitting a comparison between the benefits derived from waters with but slightly different fluoride content and permitting a contrasting of the benefits had from, for example, the 1.0 ppm F of Cambridge water and the one tenth part found in Salisbury.

While it is obvious that the addition of one tenth part fluoride per million parts water in Secretary would be of little or no value in reducing dental decay it is even more obvious that the addition of fluoride to the Salisbury supply is indicated since doing so would result in a reduction in dental decay of 60% or more. Since the quoted statistics are for elementary school children only and since dental decay is generally more prevalent in the teen years, there is every indication that an even higher percentage reduction could be anticipated by adding the correct amount of fluoride to Salisbury and Federalsburg waters.

Community	Amount Fluoride in Water (approximate)	Average Incidence of Dental Decay Found in Permanent Teeth*		
		White Children	Negro Children	All Children
Cambridge	1.0 ppm	1.27	0.95	1.11**
Secretary	0.9 ppm	1.45	-	1.45
Centreville	0.7 ppm	1.63	1.76	1.67
Greensboro)				
Easton)	0.6 ppm	1.78	1.68	1.73
Federalsburg	0.2 ppm	3.48	-	3.48
Salisbury	0.1 ppm	3.56	2.89	3.23**

*Of elementary school aged children known to have resided in specified community since birth.

**Over 65% less dental decay among Cambridge children than among Salisbury children.

WATER FLUORIDATION AT ARMY POSTS

Fluoridation of drinking water at 21 Army posts in the United States, Alaska, Hawaii, and Puerto Rico has been approved to date, it was announced by Maj. Gen. Silas B. Hayes, The Surgeon General of the Army.

These posts, in order of their approval for fluoridation, are as follows: Ft. Richardson, Alaska; Ft. Campbell, Ky.; Camp Gordon, Ga.; Ft. Knox, Ky.; Ft. Huachuca, Ariz.; West Point - U. S. Military Academy; Ft. Shafter-Schofield Barracks, Hawaii; Ft. Lewis, Wash.; Ft. Ord, Calif.; Alburquerque, N. M.; Ft. Bragg, N. C.; Ft. Leavenworth, Kan.; Ft. Sheridan, Ill.; Ft. Monroe and Langley Air Force Base, Va.; Red Stone Arsenal, Ala.; Ft. Sam Houston, Tex.; Presidio of San Francisco and Letterman Army Hospital, San Francisco, Calif.; Ft. Dix, N. J.; Henry Barracks, Puerto Rico; Camp Losey, Puerto Rico; and Sioux Ordnance Depot, Sidney, Neb.

The fluoridation of drinking water at Army installations lacking the natural fluorine necessary for oral health was approved by the Army Medical Service in July 1954.

Through the cooperation of the Corps of Engineers, the fluoridation equipment and engineering skill required to install the process are assured. Each military post must obtain both the approval of The Surgeon General of the Army and the endorsement of the Corps of Engineers.

Installation requests for fluoridation are submitted to The Surgeon General and are accompanied by a report on the natural fluoride content of the water on the post and a statement of the number of persons to benefit from the procedure.

Enclosed with the request is a diagram of the water supply system showing the sources of the water, the fluoride content and annual flow of each source, the treatment plants, distribution lines, dependent housing area and the point or points at which it is proposed to introduce the fluorides.

The installation also presents to The Surgeon General an outline of the steps to be taken to insure periodic medical inspection of the process and to establish safety rules for the operating personnel.

The age of the population at an installation is important in determining the priority for setting up the fluoridation process. A census of the number of persons under 12 years of age, the number between 12 and 16, and those between 16 and 20 years living on the installation must be a part of the application for fluoridation.

In commenting on the matter, Maj. Gen. Oscar P. Snyder, Chief of the Army Dental Corps, pointed out that in the fall of 1953 the Army Dental Corps requested an opinion from the Committee on Dentistry of the National Research Council as to the desirability of fluoridating the water supply at Army posts. The following statement was received from the Council: "The Committee on Dentistry believes that there is sufficient scientific evidence of the merits of fluoridation of public water supply to justify its use on military posts

whenever feasible and especially where there is a child population in residence."

In addition to American Dental Association and National Research Council approval, Army policy on fluoridation is based on recommendations made by the American Medical Association, United States Public Health Service, and other scientific groups. Regulations now in effect to control the granting of requests for fluoridation have a global application. The program is expanding and no change in Army policy is anticipated in the foreseeable future.

SEVERAL STATES IN THE SOUTH SEEK DENTAL DIRECTORS

The States of Arkansas, Alabama, and Mississippi are actively recruiting a dental director. If you know of anyone interested in any of these States, please have them contact the State health officer of these States. Come South, young men, to the land of opportunity.

NEW ADDITIONS TO THE GEORGIA STAFF

It has been announced that Dr. Hubert Wegner, who recently graduated from the University of Michigan School of Public Health, has been appointed a regional dental consultant in the Dental Division of the Georgia Department of Public Health. Dr. Wegner will be responsible for the two southern regions of the State which comprises about one-third of the State. Prior to entering the School of Public Health, Dr. Wegner was connected with the Veterans Administration and has had experience as a public health dentist at the local level.

Dr. Fred T. Lewis, Dental Director in the United States Public Health Service, has been assigned to the Dental Division in Georgia for orientation and field training in Dental public health. Dr. Lewis came to Georgia from the United States Coast Guard Receiving Station, Cape May, New Jersey, where he was senior dental officer.

CHARLESTON, SOUTH CAROLINA, FLUORIDATION REFERENDUM

On June 11, 1956, the people of Charleston, South Carolina, voted on fluoridation. The referendum was won by about a two to one majority. The vote was 5,292 for and 2,632 against.

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